



SATURDAY, SEPTEMBER 20, 1873.

Technical Regulations of the Union of German Railroad Administrations.

[Translated for the Railroad Gazette.]
SIGNALS.

§ 209. *Communication by Electric Telegraph.*—Every railroad should have an electric telegraph for communication between stations. The best system for such communication is that of Morse, the manipulation of which is audible.

It is well to have electric bells placed at the stations and guard houses.

§ 210. *Communication from the Track.*—It is advisable to establish between stations, and at certain intermediate points on the track, telegraphic apparatus for asking assistance, and also to render this apparatus fit for the transmission of detailed communications.

§ 211. *Optical Signals.*—Optical signals are not regarded as necessary when there is telegraphic apparatus.

They are considered indispensable for indicating the free passage of the part of the track which they command.

It is desirable that the apparatus for giving signals be fixed.

§ 212. *Enumeration of Signals.*—The different kind of necessary signals are:

I. Track signals on the open road and at stations.

II. Signals on trains.

III. Signals for passengers.

Locomotives without trains are, in relation to signals, considered the same as trains.

§ 213. *Track Signals.*—It must be possible to make the following signals on the track.

1. The train is starting from one station for a certain other station.

2. An assisting locomotive should come.

3. The track is clear.

4. The train should slow.

5. The train should stop.

(The latter signal should also be given by hand by the guard, even where it is shown by a fixed apparatus.)

6. The train should stop in front of the station.

7. The train can enter the station.

8. The switch is open for a certain track.

§ 214. *Signals at Switches and at Bridges.*—The position of the switches of stations, at least for those passed by trains at full speed, should be visible to the engine-man for a distance of 492 feet, where he passes the point of the switch. This position should be recognizable at a distance of 984 feet for switches outside of stations, and so of the position of swing bridges.

Such signals, established with this object, should be controlled by the movement of the switch rails or the bridges. It is advisable that they be, day and night, of the same color and the same form. As to the color, red should not be adopted. (See § 218.)

§ 215. *Signals at Water-Cranes.*—The position of the discharge-pipes of water cranes should be made visible during the night.

§ 216. *Signals on Trains.*—Trains must be able to give the following signals:

1. A special train or a locomotive is following.

2. A special train or a locomotive is coming in the opposite direction.

3. There is a derangement of the telegraph line; guards are urged to make a prompt inspection.

Every train running at night should carry in front two lanterns casting their light forward; at the rear at least one red lamp, and a signal lamp visible as well from the train-men as from the engine-man.

§ 217. *Signals from Train-men.*

The engine-man:

1. The signal "Attention."

2. " " "Put on brakes."

3. " " "Take off brakes."

The train-men to the engine-man:

1. The signal "Attention."

2. " " "Stop."

§ 218. *Form of Signals.*—For fixed signals by day, not only the color but the form must indicate the signal. For switches particularly, signals with arms (semaphores) are specially recommended.

For optical night signals, only the colors white, red and green may be employed, which should indicate:

White: Order—Track clear.

Green: Attention—Slack speed.

Red: Danger—Stop.

§ 219. *Explosive Torpedoes.*—The use of explosive torpedoes is recommended for stopping signals.

§ 220. *Signal Cords.*—On all trains the conductor and at least one brakeman should be in communication with the engine-man by means of a cord which reaches the steam whistle or a warning signal.

On passenger trains this cord should extend over the whole length of the train.

§ 221. *Announcing a Special Train.*—If a special train or a locomotive is announced by a train which precedes it, the conductor of this train should still give notice of it to the agents of the stations where he stops.

§ 222. Before a special train can leave a station it should be announced by telegraph to the agent of the next station, and his answer should be waited for.

§ 223. *Arrangement of Signals.*—The signals necessary according to the preceding sections are indicated by the following table of the arrangement of signals on German railroads:

REGULAR SIGNALS FOR GERMAN RAILROADS OF THE FIRST RANK.

Observation.—A locomotive alone should be considered as a train, so far as signals are concerned.

	ELECTRIC SIGNALS.	OPTICAL SIGNALS APPLIED TO FIXED APPARATUS.	SIGNALS GIVEN BY HAND.	OTHER SIGNALS.
A. Signals on the Open Road and at Stations.				
1 The train has left one station for a certain other station:				
a In one direction.....	A number of strokes agreed upon, once.	The train men see: BY DAY: The right arm of the signal raised. BY NIGHT: White light of the lantern. Signal.	The road-guard will be at his post, at night, with the lantern in his hand, showing its white glass to the train.	
b In the opposite direction.....	A number of strokes agreed upon, twice.	BY DAY: Woven willow disk placed at the ends of the part of the track on which speed must be slack.	BY NIGHT: Green light.	
2 An assisting engine should come.....	to be asked by a telegram			
3 The road is clear.....				
4 The train should slack up.....				
5 The train should stop.....		The train men see: BY DAY: The right arm of the signal placed horizontally. BY NIGHT: A red light.	The road-guard shows: BY DAY: Any object whatsoever. BY NIGHT: The green face of his lantern.	
6 The switch is turned for a given track.....		The switch shows the same signal, according to its form and color. The form should not permit the engine-man to doubt which track is clear and which is closed.	The road-guard moves violently: BY DAY: Any object whatsoever. BY NIGHT: His lantern.	On certain occasions this signal can be given also by means of torpedoes.
7 The train may enter the station.....		The train men see: BY DAY: The right arm of the signal raised. BY NIGHT: A green light in the signal lantern.		
8 The train should stop in front of the station.....		The train men see: BY DAY: The right arm of the signal placed horizontally. BY NIGHT: A red light.		
B. Signals on Trains.				
9 Signals indicating the lead of the train.....				BY DAY: The locomotive of a train running while it is dark should carry at least two white lanterns in front. BY NIGHT: The last car carries behind it a red lantern, casting its light in the direction from which train comes, and at least one lantern casting its light forward and visible to the engine-man and the train crew.
10 Signals indicating the of the train.....				BY DAY: The last car carries: One flag or plate backward. The first car or the locomotive carries: One flag or plate forward. One prolonged sounding of the steam whistle. Three or several short whistles. Two prolonged whistles. Pulling the signal cord.
11 A special train is following.....				
12 A special train is coming in the opposite direction.....				
13 Signal "attention" by the engine-man.....				
14 Put on brakes.....				
15 Take off brakes.....				
16 Signal "attention" by train-men.....				
17 Signal "stop" by train-men.....				
C. Signals for the Public by Means of the Station-Bell.				
18 The train is about to start.....				A brief ringing followed by one stroke marked distinctly. As before, followed by two strokes marked distinctly. Three sharp strokes.
19 All aboard.....				
20 Start.....				

Contributions.

The Railroad Question in California.

TO THE EDITOR OF THE RAILROAD GAZETTE:

To one who witnessed, as the writer did, the extraordinary enthusiasm and the imposing demonstrations with which San Francisco, as representing the whole of California, celebrated the completion of the Transcontinental Railroad, the present bitter hostility of the people toward the same railroad presents a good illustration of the uncertainty of human events. One finds one's self asking "What man hath done this?" The spectacle of an African heathen at one moment praying to his wooden god and at the next moment beating it with great fury

because it helps him not, scarcely presents a greater contrast than the former and the latter attitude of California toward its railroad—the only one it has. It would seem that when a great State has only one railroad, they ought to be more careful of it than the Californians are at present. But it becomes a very serious question to solve—what can have caused this total revolution of feeling? Five short years ago San Franciscans went near to equal in their enthusiasm the volatile and fickle populace of Athens, who crowned a copy of the London Times containing a favorable leader on Crete; to-day that city and a great majority of all Californians can scarcely find expressions bitter enough with which to speak of the Central Pacific Railroad. There is a State election to be held on September 3, now close at hand, and all the old party watchwords are

hushed or grown so faint that they are heard only in the conventions after the resolutions are read, but not among the people outside. In several counties the anti-railroad movement has swept away even the party name (generally the Democratic), and in all the counties it has emptied those names of any further significance. Governor Newton Booth and Henry Edgerton, the two most brilliant men in California, quietly ignoring their straight party friends (Republicans), speak to vast audiences of the people, the one in San Francisco the other in Sacramento, and almost the only burden of their magnificent speeches is the railroad question. The Farmers' Granges are few and inactive in this State, but the men who would curb the railroad, whether Independents, Taxpayers or People's Party, are numerous and greatly in earnest.

What has caused this extraordinary development of hostility?

First, the railroad, through no fault of its own, has disappointed the people. Never, since Babel heaved its high walls in the face of heaven, have men accomplished more thoroughly the opposite of what they sought in building this road. It was fondly believed that it would bring the hungry East and Europe to California in search of land; but frequently the heaviest travel in the early days was the homesick Californians going East on a visit. It was believed it would enhance the price of land; on the contrary the real-estate market suffered an immediate and great collapse. It would be impossible, even if it were in place here, to enumerate the multitudinous "Great Expectations" which the sanguine, avaricious Californians, ever vainly regretting the "flush times" of 1851, had founded on the completion of this road. No railroad ever constructed could have fulfilled a tenth of the golden prophecies made of this. Hence disappointment, of course, and disgust. In modern civilization the railroad is, in one sense of the word, the great leveler; and Californians were ever prone to forget that this little Pacific Coast empire was at first founded on a plane quite too elevated, and was going at a high pressure pace, and that the veritable function of the railroad was to humble it, and start it out again on a fair and even race with the rest of mankind. Disappointed thus, the people overlook and undervalue the benefits it has wrought—the cheapening of fares from the old wagon epoch, the quickening of mails, the increase of immigration and a hundred things.

Second, "Interference in politics." No reasonable railroad man will deny that this is an evil, and only an evil, and in California it has become an evil of alarming magnitude. But the discussion of it belongs rather to statesmen than to a railroad publication; and it must suffice to say that, among the few real grievances of the people against the railroad company, this is perhaps the greatest and most obnoxious. Excessive freight rates—if they are excessive—will only keep men poor, but bribe-giving saps the very foundation of government and society. And bribes are offered no longer to legislators only, but to the people also.

Third, Refusal to pay assessed taxes. This also is rather a political topic than one proper for discussion here; but it is a source of much bitterness of feeling, especially among the inhabitants of Placer County. The recent payment by the company of \$37,144 delinquent taxes into the treasury of that county has given satisfaction; but the act was rather ungracious on account of its long postponement. The company's reiterated assertion, through its attorneys, that the road ought to be taxed for no more than the ties and rails are worth as old wood and iron—say \$6,000 a mile—in that mountainous country, has caused much dissatisfaction. The quarrel of Placer County with the Central Pacific Railroad is probably pretty well known to most railroad men throughout the Union. It is of annual recurrence. The people of that county got the impression from the company's documents published some years ago that the taxable property of their county would be increased some \$13,000,000, or thereabout, the taxes on which would more than compensate them for the subsidy asked. But a road which is worth only \$6,000 a mile is not particularly remunerative to the tax collector. The company's argument, that because the Central Pacific Railroad was largely constructed by the money of the Federal Government, therefore it is not subject to taxation by the State, will certainly not hold water.

Fourth, Favoritism in rates. In recent leading articles in the RAILROAD GAZETTE it has been sufficiently shown that "discriminating rates" are not necessarily unjust; but favoritism in rates is, and cannot be otherwise. In this phrase must be included also free passes issued to any one not an employee, since A, B, C, D and all the rest of them pay more for their rides every time E has a costless ticket. It is not necessary for me here to add anything to what has recently been written in your columns respecting "discriminating rates" except in one particular. I believe nothing was said concerning the injustice, real or apparent, which might be done by a railroad company transporting passengers or freight a greater distance for the same money as a less distance by reason of competition on the former. Not a little indignation was excited some while ago among our German fellow-citizens because a company of them were carried from Stockton to San Francisco (91 miles) on an excursion for nearly the same price that was charged a company from Marysville to San Francisco (190 miles). This was because there happened to be a competition from Marysville and none from Stockton. If the Stockton Germans were carried at "published rates" (which I do not know, but which was highly probable), they had nothing to complain of; and if the Marysville Germans secured "excursion rates," they were lucky, that was all. There was no injustice done, though perhaps more courtesy might have been exhibited on the part of the company.

But in Placer county there are "special rates" observed which are clearly unjust. That county has a standing quarrel with the Central Pacific Railroad, on account of non-payment of taxes, etc., hence it is a misfortune to be a citizen of that county whenever one is obliged to travel. A familiar instance presents itself. A friend of mine embarked at Sheridan and rode to the Junction, then bought another ticket and rode to Rocklin (total distance, 22 miles), for which he paid \$2.50. The sum of \$2.25 will purchase a ticket from Sheridan to Sacramento (36 miles). But the route from Sheridan to Rocklin lies wholly within Placer county, hence the discrimination in part, though the charge might perhaps have been smaller if only one ticket had been purchased instead of two. Other instances of discrimination against the people of Placer County might be adduced. Observe, I do not deal in wholesale, sweeping charges, as the manner of some is, and am in all things amenable to reason and facts; but I do protest against this discrimination as unfair. Colfax, the uppermost town of any importance in Placer county, has an elevation of 2,421 feet; hence it costs more, of course, to haul to that elevation the immense stocks of goods required for the Grass Valley quartz mines than it would to haul them an equal distance from San Francisco on a

level. Therefore, if the freight charges are higher than they are from tide-water an equal distance up the California & Oregon Railroad, there is no injustice done; but when the charges are higher for a certain level distance in Placer than for the same level distance in another county, that is "discrimination."

But there is much written and uttered in this State concerning unequal and extortionate charges which is not reasonable. For instance, it is stated that a certain gentleman dispatched a number of car-loads of plums and pears to Chicago, paying \$500 currency per car-load of 20,000 lbs.; that he received \$6 a box each for pears (50 lbs.) and plums (25 lbs.); and would have cleared large profit but for the extortionate charges. Now, let us suppose he sent four car-loads of only 10,000 pounds each—after deducting the freight, \$2,000, he would have had a residue of \$6,300. Suppose, then, his other expenses, losses, etc., amounted to \$2,500; he would still have cleared \$3,800—no mean profit, surely.

Again, in noticing the fact that a second Swansea is about to be established on the Continent of Europe, at the port of Antwerp, a prominent paper complains that were it not for the excessive charges of the Central Pacific Railroad, this second Swansea might be built up on this coast. Now, before making any examination of this matter at all, one finds himself asking, Is it possible that the freight charges on ore from Ogden to San Francisco exceed those by rail and steamer from Ogden all the way to Swansea? I am not able to state what is the rate per ton for ores from Ogden, but from Reno, Nevada, the principal point for the shipment of silver ores, it is \$5.85 per ton in car lots. But the best testimony is that of the smelters themselves. The great Silver and Lead Smelting and Refining Works of Thomas H. Selby & Co., situated at Black Point, San Francisco, are the just pride and boast of California. In their advertisement they state: "Mining companies having given Eastern and foreign markets a fair trial, are at last convinced of the superiority of San Francisco for the economical beneficiating of base metals and ores, and are now shipping to the said works almost exclusively of the former and a large proportion of this latter. The works supply the entire demand of the Pacific coast. Imported and eastern shot and lead of every description has been nearly driven from the market, and heavy monthly shipments are made to New York." The company now has a capacity for receiving and treating about 100 car-loads a week, or say 15 to 20 trains per month. In case of inability of the miners to pay expenses of transportation, the companies carry the ores C. O. D., the expense-bills following all along the route, whether by team, car, or steamboat, to San Francisco.

The published tables of the Central Pacific Railroad do not enable us to determine the destination of local freight, whether east-bound or west-bound; it is only from the tables of through freight that we can gain thoroughly satisfactory information. In the year 1872 there was shipped eastward, of ore and base metal, none; westward, ore, 6,349,132 pounds; base metal, 903,606 pounds. Of local freight, there were shipped, ore, 12,121,295 pounds; base metal, 14,560,949 pounds. The destination of this large amount is not given, but it is safe to assume that four-fifths of it went to San Francisco. Thus we see that, of both kinds together, there were received in San Francisco 3,626 tons which had passed over the whole length of the Central Pacific; and at least 10,000 tons from way stations. This certainly indicates an active movement of mineral, whatever the charges were. As Rome is not built in a day, neither is a Swansea, but here is a good beginning.

Heretofore we have only examined the matter of freights and fares absolutely; now let us consider it relatively. The farmers of Illinois have made, or caused to be made, two enactments regulating railroad charges in that State, and we will therefore accept their tariff of freight rates, made to suit themselves, as an equitable basis of comparison.

In the subjoined table the distances from Chicago and San Francisco are the same on the Illinois Central and the Central Pacific respectively:

CENTRAL PACIFIC.				No. miles.	ILLINOIS CENTRAL.			
1st class.	2d class.	3d class.			1st class.	2d class.	3d class.	
100 lbs.	100 lbs.	100 lbs.			100 lbs.	100 lbs.	100 lbs.	
cts.	cts.	c'ts.			cts.	cts.	cts.	
6	5	4	7	17.00	14.00	12.00		
12	7	7	16	23.00	21.00	18.00		
12	8	8	30	35.00	32.00	25.00		
15	13	11	48	43.00	36.00	29.00		
16	14	12	62	48.00	38.00	31.00		
17	15	13	92	48.00	39.00	32.00		
18	16	14	104	51.50	41.50	34.10		
18	16	14	113	53.50	43.50	35.30		
18	16	14	140	57.00	47.00	37.50		
26	24	22	155	59.50	49.50	39.50		
30	28	26	160	61.00	51.00	41.00		
30	28	26	192	62.00	52.00	42.00		

On the one hand these rates are calculated in gold, on the other in currency, which would make a trifling difference if they were equalized.

I have thus endeavored to present some, not all, of the causes which have engendered the great animosity of the people toward the railroad; and have shown that some of those causes are substantial and reasonable, while others are imaginary and unreasonable. If this were a political article, the case might have been stated far more strongly than it has been; on the other hand, no attempt has been made to give a just estimate, nor could one be given, of the benefits the road has conferred on the country. It is manifest that the principal, and in fact almost the only real grievances of the people against the railroad are of a political or personal nature. I do not for a moment underestimate their grievances, nor do I wonder at the rage of the people. The farmers are very far from the great grain markets of Europe, the tariff oppresses them, the San Francisco middlemen gnaw away their profits, the men who charter ships devour their hard-earned gains, while the rail-

road refuses to pay its share of taxes. Among all these evils and inflictions the railroad is close before their doors; they can see that, and they strike at it for all the others which are unseen.

Political writers in California sometimes refer to the magnificent line of seacoast, stretching with an unbroken front 700 miles along the State, and to the two main rivers which wind their way down the axial line of the great central basin, as constituting a better natural means of internal communication than is enjoyed by most States. Why, it is asked, possessing this coast and these rivers, are we so bound in all our incomings and outgoings by one great audacious monopoly? If these channels and outlets of commerce were indeed the lever of vantage which their descriptions would have us believe, it would argue very ill for the enterprise of California if it could not therewith overturn the power of the railroad. But, as a matter of fact, both this coast and these rivers give small succor; they have few approachable points and many long stretches of forbidding swamp, or shoal, or cliff; the amount of wheat transported in the coast steamers or sailers is quite inconsiderable, while on the river the small amount that is brought down is fetched on barges, towed by small boats. Steamers of deep draught are useless.

STEPHEN POWERS.

Shoulders at Wheel Seats.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your number of August 30, I notice the communication of De Sanno, relative to the breaking of car axles inside of the wheel. The cause he assigns to the axle's having a shoulder at the end of the wheel-seat. Now this shoulder is utterly condemned by him in any form whatever. Well, we will admit that there have been breaks at this shoulder inside the wheel, but perhaps De Sanno does not know the full value of the shoulder he thus condemns; very likely he does not. Was there ever such a thing as a loose wheel thought of in connection with this shoulder? I think so; there are probably ten, yes, twenty loose wheels to one broken axle. Now without this shoulder and with the loose wheel, where would it go. Certainly not out against the rail, for this would drive it back. It would naturally work in toward the other wheel, and in a short time be off the rail entirely, which would be perhaps worse than the broken axle at the first. At any rate, in my opinion the chances are in favor of the shoulder. I think your theory too dangerous to try by actual experiment.

M. M.

The International Patent Congress.

The first International Congress, convened with the object to discuss the question of patent right, and to lay down—on the basis of the experience of various countries, and the materials collected—fundamental principles for an international reform of patent legislation, has finished its labors. After five days of assiduous deliberations, which were at times rather animated, its business has been brought to a close, for the present. If there was any incredulity evinced at the commencement, notwithstanding the importance of the subject, as to the probable success of the meetings of the Congress—and it must be admitted there was great doubt expressed in this respect, and in the utility of the Congress in general—it was dispelled by the proceedings, which have taken a course so satisfactory and successful as to surpass the sanguine expectations of the most strenuous advocates of patent right, and the assimilation of the legislation of the different civilized states of the world in this respect.

On Monday, the 4th inst., the Congress met for the first time in the Grand Hall of the Jury Pavilion in the Exhibition grounds. There was a large number of members present—men of science and practical ability, engineers, political economists, members of the legal profession, representatives of the higher branches of industry, inventors and manufacturers—all men of high standing and reputation in their respective spheres of life, from various countries, the learned element of Germany predominating. There was but a small number of Englishmen present, but the Americans from the United States mustered very strong. In fact, the latter as a body, and some of their leading men, such as Professor Blake, Mr. Hamilton Hill and others, have taken throughout a very lively interest and most active part in the matter, as well in its preliminary stages as at the public meetings. As already mentioned in our previous report on this Congress, a preparatory committee had been appointed in accordance with the general programme, whose duty it was to prepare the materials to be laid before the Congress, to elaborate the matters of inquiry, and in general to prepare all the preliminary matters for the opening of the Congress. This preparatory committee was composed of gentlemen from all parts of Germany, Austria, England and the United States of America. No Frenchmen, no Italians, no gentlemen, in short, of other nationalities have taken part in the Congress. The foreign governments were represented—not officially—by delegates to report the proceedings to their respective governments; they were Mr. J. M. Thacker, Assistant Commissioner of Patents, of the United States of America; Mr. Thomas Webster, Q. C., of London, for England; Professor Klostermann, of Bonn, for Germany; Professor Baumbauer for Holland; Mr. Adolfott for Switzerland; Commentatore Codazza for Italy; and Mr. Fraenkel, Railway Director of Stockholm, for Sweden.

The Congress elected by acclamation, on the proposition of the preparatory committee, His Excellency Baron von Schwarz-Senborn, Honorary President; Mr. William Siemens, C. E., London, Acting President; Mr. Thomas Webster, Q. C., London, Government Counselor, Dr. Franz Neumann, of Vienna, Dr. Werner Siemens, of Berlin, Dr. Eugen Langen, of Cologne, President of the Society of German Engineers, and Mr. Hamilton Hill, of Boston, United States, Vice-Presidents; to which number was added, on the proposition of Baron Schwarz, Aulic Counselor, Chevalier von Engerth, of Vienna, and the Chief of the Patent Office in Vienna, Dr. von Rosas, Dr. Ratkowsky, Vienna, Professor Dr. W. F. Esner, Vienna, Dr. Rosenthal, Cologne, Mr. Carl Pieper, C. E., Dresden, and Professor Blake, New York, and Mr. Kanpe, of St. Petersburg, Secretaries.

The debate on the different points was at length concluded by the adoption, by 74 votes against 6, of the following amended resolutions:

"Resolution I.—The protection of inventions is to be guaranteed by the laws of all civilized nations under the condition of a complete publication of the same; because:

"a. The sense of right of civilized nations demands the legal protection of intellectual work.

"b. This protection affords the only practical and effective means of introducing new technical ideas, without loss of time, and in a reliable manner, to the general knowledge of the public.

"c. The protection of invention renders the labor of the in-

ventor remunerative, and induces thereby competent men to devote time and means to the introduction and practical application of new and useful technical methods and improvements, or to attract capital from abroad, which, in the absence of patent protection, will find means of secure investment elsewhere.

"d. By the obligatory complete publication of the patented invention, the great sacrifices in time and of money, which the technical application would otherwise impose upon the industry of all countries, will be considerably lessened.

"e. By the protection of invention the secrecy of manufacture, which is one of the greatest enemies of industrial progress, will lose its chief support.

"f. Great injury will be inflicted upon the countries which have no rational patent laws by the native inventive talent emigrating to more congenial countries, where their labor is legally protected.

"g. Experience shows that the holder of a patent will himself make the most effectual exertions for a speedy introduction of his invention."

"Resolution II. An effective and useful patent must have the following principles:

"a. The inventor or his legal heir only can obtain a patent. A patent cannot be refused to a foreigner.

"b. In order to carry out the principle stated above (a), the introduction of the system of a preliminary examination is recommended.

"c. A patent for an invention should be granted for fifteen years, or the option should be to extend it to that period.

"d. The granting of a patent must be accompanied by a detailed and complete publication, which renders the practical application of the invention possible.

"e. The cost for granting a patent should be moderate, but in the interest of the inventor an increasing scale of fees should be fixed, so as to cancel a useless patent as soon as possible.

"f. It should be easy for any one to obtain, through a well-organized patent office, the specifications of any patent, as well as to ascertain which patents are still in force.

"g. Laws should be passed by means of which a patentee may be compelled, in cases of public interest, to allow the use of his invention for a suitable remuneration to all bona fide applicants."

For the rest, and especially with respect to the proceedings in the granting of patents, the Congress refers to the English, American and Belgian patent laws, and to the proposition made by the union of German engineers for a patent law of the German empire.

"Resolution III.—In consideration of the great difference between the existing patent laws, and in consideration of the altered state of international communication, the necessity of reform becomes evident, and it is to be strongly recommended that the different governments should endeavor to arrange, as soon as possible, an international understanding on the patent laws.

"The not executing of a patent in a country is no reason for its becoming void in that country, as long as the invention has been carried out once, and the possibility is there that the right of using the invention can be obtained by any inhabitant of this country."

At the closing of the Congress the committee was constituted as a permanent executive committee, with the power to publish the resolutions adopted, and to submit them to the various governments. The committee is also authorized to choose members, and to prepare and convolve in a suitable manner a second Congress.—*Engineering.*

Train Accidents in August.

At two o'clock in the morning on the 1st, a south-bound freight train on the Rome, Watertown & Ogdensburg Railroad ran through an open switch upon a siding and into a car-load of corn at Watertown, N. Y.

On the morning of the 1st, near Cunningham, Pa., on the Allegheny Valley Railroad, there was a collision between a north-bound freight and a south-bound oil train, by which two brakemen and a boy riding on the train were killed, and an engine-man had his thigh broken. Fifteen cars of oil were burned and the bodies with them.

On the morning of the 1st, as a south-bound freight train on the New York Central & Hudson River Railroad was taking a siding between the up and down tracks, between Tarrytown and Irvington, the engine, owing to a loose wheel or some other defect, it is supposed, jumped the track and went over the down track into a creek and one car jumped the track in such a way as to have one corner over the up track, and

At the same moment, almost, a north-bound express, running about 40 miles an hour, struck it so that it tore up the side of the baggage car and thrust some timbers through the front window of the first drawing-room car. One passenger was dangerously, and a passenger, a brakeman and the baggage-man severely injured, and many persons were scratched and slightly hurt by broken glass.

On the afternoon of the 1st, near Mineral Point, Pa., on the Pittsburgh, Washington & Baltimore Railway, a freight train ran into the rear of a gravel train, killing one workman and injuring three others, breaking up several cars and blocking the track for some time.

On the evening of the 1st, three miles above Shushan, on the Rutland Division of the Rensselaer & Saratoga Railroad, the engine and three cars were thrown from the track by gravel which had washed down upon the road.

On the night of the 1st, near Aberdeen, Md., on the Philadelphia, Wilmington & Baltimore Railroad, the New York train for Washington struck a cow near the depot, throwing the animal into the station and the train from the track, utterly wrecking a baggage car and one coach and injuring another coach.

About three o'clock in the morning, on the 2d, about three miles west of Indianapolis, on the Vandalia Line, the two express cars, baggage car and one coach of a west-bound passenger train were thrown from the track by a broken rail. The baggage-man was badly hurt in jumping.

Early in the morning of the 2d, just west of Atchison, Kan., on the Atchison, Topeka & Santa Fé Railroad, the locomotive of an east-bound passenger train ran off at a switch which had been maliciously misplaced, but which was discovered in time to prevent further damage.

On the morning of the 2d, at Bound Brook, N. J., on the Easton & Amboy Railroad, a dirt car jumped the track, causing the breaking up of 15 other cars and killing one man.

Before 4 o'clock in the morning of the 4th, the water-gauge glass in the cab of the engine of an east-bound express train on the Great Western Railway of Canada burst as it was approaching the draw bridge over the Welland Canal at Thorold, and the steam and water filling the cab frightened the engine-man so that he jumped before stopping the engine. The draw was open and the engine, tender and baggage car went head first into the canal, blocking the road two hours.

On the 4th, at Dodgeville, Mass., on the Boston & Providence Railroad, a south-bound freight train ran off the track, wrecking twelve cars and blocking both tracks about twelve hours.

On the 4th, at Coxsackie, 22 miles below Albany, on the New York Central & Hudson River Railroad, there was a collision between a freight and an oil train by which two engines and a number of cars were injured.

On the night of the 4th, at Otisville, N. Y., on the Erie Railway, an east-bound coal train going down a grade got beyond control, and on reversing as it approached another train, the cylinder heads blew out. The engine-man and fireman jumped

and the latter was injured. The train struck the one ahead, but not hard enough to do much damage.

On the morning of the 5th, between Duncannon and Mifflin, on the Pennsylvania Railroad, the fourth section of an east-bound freight train ran into the rear of the third section, demolishing the caboose and badly damaging the engine.

On the morning of the 5th, the locomotive of a south-bound train on the St. Paul & Pacific Railroad was thrown from the track by a broken rail between Minneapolis and St. Paul.

On the afternoon of the 5th, at Lock's Mills, Me., on the Grand Trunk Railway, a freight train ran off the track and was broken up.

On the afternoon of the 5th, near Jamesport, Mo., on the Southwestern Division of the Chicago, Rock Island & Pacific Railroad, a freight train with two engines on a down grade ran into some cattle, by which both engines were thrown into the ditch and the train wrecked. A fireman was killed, and both engine-men and two brakemen were hurt.

On the afternoon of the 5th, as a passenger train was leaving Vanderbilt Landing, on the Staten Island Railroad, the tender and forward end of the baggage car were thrown from the track by a misplaced switch.

On the morning of the 6th, a mile and a quarter east of Naperville, Ill., on the Chicago, Burlington & Quincy Railroad, an east-bound passenger train ran into the rear of a freight train, crushing the caboose and killing the conductor and a drover who were in it, and injuring a passenger and the express engine-man. The freight had left Naperville 13 minutes ahead of the express, with orders to run to the second station ahead (eight miles) and there wait for the passenger to pass. The passenger train struck it 26 minutes later, only a mile and a quarter from Naperville, there being a dense fog at the time. No explanation of this slow running is given.

On the morning of the 6th, at the Iron Cliffs Furnace, near Negaunee, Mich., as some cars heavily loaded with pig iron were running over a trestle work, they broke through and killed four men who were at work under the trestle.

On the morning of the 6th, between Ottawa and Le Sueur, Minn., on the St. Paul & Sioux City Railroad, there was a collision between two freight trains, which, however, had come so nearly to a halt that little damage was done.

On the 7th, on the Kansas City & Cameron Branch of the Hannibal & St. Joseph Railroad, three cars loaded with merchandise were thrown from the track by a broken flange. The road was blocked for several hours, as it was important to get the cars on the track without ditching their contents, and thus exposing them to damage.

On the evening of the 7th, at Babylon, L. I., on the Central Railroad of Long Island, there was a collision by which the locomotives of both trains were badly wrecked. A fireman was severely scalded. The conductor of one of the trains immediately disappeared, and it is reported that his negligence was the cause of the collision.

On the evening of the 8th, at Mount Carbon, Pa., on the Philadelphia & Reading Railroad, a passenger engine ran off the track in trying to enter a switch which was turned for a train from another track, but whose signal the engine-man of the passenger locomotive had mistaken.

The other train could not be stopped and ran into this derailed engine, damaging it somewhat.

On the morning of the 9th, a few miles west of Brenham, Texas, on the Austin Branch of the Houston & Texas Central Railroad, a freight train ran off the track and blocked the road several hours.

On the morning of the 9th, three coaches and a sleeping car of a train on the Indianapolis, Cincinnati & Lafayette Railroad jumped the track as they were entering the Union Depot in Indianapolis, causing an hour's delay.

On the 9th, several cars of a coal train on the Delaware, Lackawanna & Western Railroad were thrown from the track on the Hoboken coal piers.

On the afternoon of the 9th, at the Illinois Valley coal shaft, near La Salle, Illinois, on the Illinois Central Railroad, a south-bound freight train ran into a construction train which was standing on the track, badly wrecking both engines.

On the afternoon of the 9th, near Narrows Bridge, between Orillia and Atherly, on the Canada Midland Railway, a gravel train ran over two cows, by which the cars were thrown from the track and eight men in the caboose fatally injured. The road was blocked six hours.

On the afternoon of the 9th, near Bower's Hill, Va., on the Seaboard & Roanoke Railroad, a west-bound freight train and an east-bound wood train met in collision while running slowly in a heavy storm. The engineer of the freight had reversed when he was thrown from the cab by the shock, after which his engine backed with no one on it and ran back eight miles to the upper depot in Portsmouth, where it struck another engine and did it some damage. The engine-man on the freight was slightly injured.

On the evening of the 9th, about three miles above Central Falls, on the Providence & Worcester Railroad, a coal car of a south-bound freight train jumped the track and was followed by nine other cars, which were badly broken and obstructed both tracks for some time. A brakeman was slightly injured.

On the night of the 9th, near Ellershorpe, 35 miles from Halifax, N. S., on the Windsor & Annapolis Railroad, the locomotive of an excursion train carrying representatives of New England railroads was thrown from the track by running over an ox, delaying the train all night.

On the morning of the 10th, near Hamburg, S. C., on the Wilmington, Columbia & Augusta Railroad, a sleeping car of a passenger train ran off the track and over a trestle, injuring two passengers and wrecking the car.

On the morning of the 11th, at Coldwater, N. Y., on the New York Central & Hudson River Railroad, a freight train ran into the rear of another preceding it which had stopped for the purpose of cooling a heated journal. There was a fog at the time and the engine-man of the following train did not see the signals. His engine went through the caboose and wrecked one or two other cars, and then was considerably damaged itself.

On the 11th, near Peru, Ind., on the Toledo, Wabash & Western Railway, there was a collision between two freight trains by which much damage was done.

On the 11th, north of Fort Wayne, Ind., on the Fort Wayne, Jackson & Saginaw Railroad, an entire freight train was thrown into the ditch and badly wrecked by obstructions which had been placed upon the track. The fireman was seriously injured.

Early in the morning of the 12th, at Point of Rocks, Md., on the Baltimore & Ohio Railroad, two freight engines ran off where the track had been damaged by a flood.

On the morning of the 12th, about two miles from Mingo, O., on the Pittsburgh, Cincinnati & St. Louis Railway, a freight train ran into the rear of another, breaking up several cars and blocking the road about ten hours.

On the 12th, a coal train broke through a bridge on the Southern Central Railroad at Hartford Mills, N. Y., wrecking five or six cars.

On the 12th, near Nashua, N. H., on the Concord Railroad, the cars of a south-bound express train, from which the engine had been detached, ran through an open switch into the head of a north-bound freight which was standing on the siding, breaking the platforms of all the cars except one, which was provided with Miller platforms, and badly damaging the engine and tender. The switchman had forgotten the freight train. A conductor and one passenger were slightly injured.

On the 12th, the forward truck of the locomotive of a west-bound express train on the Pennsylvania Railroad was thrown from the track by a plank which a fresher had washed across

the rails, but the prompt application of the Westinghouse brake prevented further damage.

On the 12th, a Burlington & Missouri River locomotive, left standing in front of the Burlington round-house, the engine-man having stepped off, suddenly started and backed into the building, ran against a tender, which struck a flat car and pushed it into a wood-working shop through a partition wall. A tender was badly wrecked and the engine somewhat damaged.

On the 12th, near Hobart, Ind., on the Pittsburgh, Fort Wayne & Chicago Railway, there was a collision between two freight trains and a bad wreck, consequent on the failure of an operator to deliver an order.

On the morning of the 13th, near Lewis's Mill, O., on the Central Ohio Division of the Baltimore & Ohio Railroad, the coupling of an east-bound stock train broke and part of the cars went off the track, killing and maiming 350 sheep.

On the morning of the 13th, a train from Philadelphia to Long Branch over the Amboy Division of the Pennsylvania Railroad ran off the track where the road had been washed away by a great storm, near Merchantville, N. J., and the express messenger, the engine-man and the fireman were injured.

On the 13th, as a train of flat cars was being backed slowly down the heavy grade of the Jeffersonville, Madison & Indianapolis Railroad at Madison, Ind., a coupling broke, and three of the flat cars ran with terrible velocity down upon a train of box cars, destroying the latter and fatally injuring one man who was on them.

On the afternoon of the 13th, as a north-bound passenger train on the Cincinnati, Richmond & Fort Wayne Railroad was nearing Hoagland, Ind., going at full speed, it jumped the track and the coaches went over on their sides. The engine-man was badly hurt.

On the evening of the 13th, there was a butting collision between two accommodation trains on the Baltimore & Potomac Railroad at the Townsend street junction in Baltimore. Both engines and several cars were badly wrecked, and a fireman was fatally and an engine-man severely injured. The south-bound train was behind time and both trains were running slowly.

On the evening of the 13th, as a passenger train on the European & North American Railroad was leaving Carleton for Bangor, Me., a Pullman sleeping car mounted a rail and ran off the track, and just as it reached the edge of the wharf broke loose, but for which it would have been thrown into the bay.

On the night of the 13th, the locomotive of an oil train on the Pennsylvania Railroad ran off the track and turned over in a pond, near Philadelphia, killing the fireman. The cars caught fire from the engine and 11 of them were burned.

On the night of the 13th, a west-bound express train on the Baltimore & Ohio Railroad was thrown from the track near Elk Ridge Landing, where the road-bed had been washed away by the great storm of that date.

On the morning of the 15th, the locomotive and eight cars of a freight train fell through a trestle near Vernon, Ind., on the Madison Branch of the Jeffersonville, Madison & Indianapolis Railroad, injuring slightly the Assistant Superintendent, Mr. E. G. Boreman, the engine-man and the fireman.

About noon on the 15th, a north-bound freight train on the Burlington & Carthage Branch of the Chicago, Burlington & Quincy Railroad ran off the track between Dallas City and Colusa, Ill., and four cars went into the ditch. The train was delayed eight hours.

Near midnight on the night of the 15th, a regular north-bound freight train on the Chicago & Alton Railroad ran into the rear of an extra train which had stopped to take water at a water tank at Funk's Grove, Ill., crushing through a sleeping car which was being taken to the shops for repairs, dangerously injuring one passenger and another less seriously. Several freight cars were wrecked and the striking engine was badly damaged. The fault is charged to the conductor of the extra, who did not send back a flag.

Early on the morning of the 16th, two miles east of Jordan, N. Y., on the New York Central & Hudson River Railroad, the locomotive and ten cars of a freight train jumped the track, blocking the road for several hours. Some obstruction, accidental or malicious, caused the derailment.

On the morning of the 16th, when a west-bound express train on the New York Central & Hudson River Railroad was running between Rome and Oneida, the locomotive got short of water and ran forward to Oneida to fill the tank, leaving the train. Returning, the engine backed the tender so rapidly against the train as to wreck it, the express car and baggage car, and delay the train an hour. It was done in broad daylight.

On the morning of the 16th, a wheel broke under an east-bound fast freight train two miles below Emporium, Pa., but not being discovered it was dragged for six miles, when in going over a bridge it left the track and went down an embankment, taking five other cars with it. The rear of the train was left on the bridge, and, directly afterwards, a flag having been sent back but a little distance, a following freight train, coming down a grade, ran into the wrecked train, breaking the engine and some cars. The road was blocked about twelve hours.

On the 16th, at Schenectady, N. Y., as a coal train on the Schenectady & Susquehanna Railroad was backing towards a siding, a special train ran into its rear car, knocking off the head-light of the locomotive of the special train, and causing some delay.

On the afternoon of the 16th, as a west-bound passenger train on the Catawissa Railroad was approaching Mintzer's Switch, three miles above Tamaqua, Pa., a special train carrying the Vice-President of the Philadelphia & Reading Company eastward ran into it. Both engines were ruined. The mail agent and baggage-master were injured. It is reported that the engine-man of the special train was mistaken in the time of the opposing regular train, with which, however, if the train was moved as special trains usually are, he would have had nothing to do.

On the evening of the 16th, at Westley, R. I., on the Stonington Railroad, an accommodation train ran into the engine of a freight which was backing at the time, by which the two locomotives were disabled, and the track blocked several hours.

On the evening of the 16th, an east-bound freight train on the Erie Railway was thrown from the track by a broken wheel at the junction east of Paterson, N. J., and four cars were thrown across the opposite track, blocking the road three hours.

On the night of the 16th, the locomotive of a passenger train on the Missouri Pacific Railroad was thrown from the track and into the ditch about two miles above Fort Leavenworth, Kan., by an obstruction consisting of two rails and a tie, which had been maliciously placed on the track.

About half-past ten, on the night of the 16th, between Willow Springs and Lemont, on the Chicago & Alton Railroad, there was a collision between a south-bound fast passenger train running 30 or 35 miles an hour and a heavy north-bound coal train, by which the passenger engine, tender, baggage car and mail car were thrown to one side by the Mogul coal engine, and the smoking car struck square in front, raised up over the front of the engine, and had its flooring torn up, through which steam from the punctured boiler penetrated, scalding severely nearly every inmate. Twenty persons were fatally injured and 30 less seriously. There were two engine-men on the passenger train, one of whom was killed and the other badly injured in jumping, while its fireman was killed and the engine-man of the coal train was slightly injured. All or nearly all the other victims suffered from scalds only, and the Blackstone platforms of the coaches behind the smoking car prevented any telescoping or even a derailment, though the shock was almost as great as possible. The night was very foggy and the trains discovered each other almost at the instant of meeting. The

coal train was running on the other train's time in flat contradiction of orders, and its conductor and engine-man have been arrested and indicted for manslaughter.

On the 17th, at the oil works at Weehawken, N. J., on the Erie Railway, a freight locomotive ran off the track.

On the morning of the 17th, a box car broke loose from a freight train which was leaving Petersburg on the Petersburg & Weldon Railroad, and ran back through the city and struck at a speed of about 40 miles an hour a locomotive which had been standing near the Appomattox depot, but which the engine-man had begun to get out of the way, breaking its cow-catcher.

On the morning of the 18th, at Monument, Utah, on the Central Pacific Railroad, a freight train ran off the track where a frog had been removed, and the engine and four cars were tumbled into the ditch, badly injuring a fireman. A danger flag had been hung out, but in such a position that it could not be seen at a sufficient distance to stop.

On the afternoon of the 18th, in Duluth, Minn., on the Northern Pacific Railroad, a locomotive, tender and baggage-car were thrown from the track by a misplaced switch.

On the evening of the 18th, three-quarters of a mile south of Sandy Hook, N. J., on the New Jersey Southern Railroad, a south-bound passenger train ran through an open switch, and the engine, tender and forward truck of the baggage car went off the track. The baggageman was injured, and the engine badly damaged.

On the morning of the 18th, about five miles west of Crawfordville, Ind., on the Indianapolis, Bloomington & Western Railroad, there was a collision between a coal train and a freight train by which the road was blocked about four hours.

On the 19th, at Coal Port, N. J., on the Belvidere Delaware Railroad, a train of empty coal cars, while moving up, ran into a loaded coal train, destroying several of the empties.

On the 19th, near West Liberty, Iowa, on the Burlington, Cedar Rapids & Minnesota Railroad, a freight train ran into a drove of cattle, breaking up the locomotive and ten cars.

On the 19th, near Camp 18, on the Central Pacific Railroad, the front car and baggage car attached to an east-bound passenger train ran off the track and blocked the road five hours.

On the afternoon of the 19th, at Montgomery, Pa., there was a collision between an east-bound express and a west-bound mail train on the Philadelphia & Erie Railroad, by which two passengers were injured.

On the afternoon of the 19th, 12 miles from Des Moines, Iowa, on the Chicago, Rock Island & Pacific Railroad, the breaking of an axle in an east-bound freight train caused the wrecking of eight cars loaded with wheat and flour, blocking the road a few hours.

About 4 o'clock on the morning of the 20th, a north-bound express train on the Allegheny Valley Railroad ran into a land slide a mile and a half north of Scrub Grass, Pa., by which the whole train was thrown from the track and the engine and two baggage cars went into the ditch, delaying the train 12 hours.

On the morning of the 20th, as an express train on the Indianapolis, Bloomington & Western Railroad was entering Indianapolis two hours late, it was met on a curve by a west-bound Indianapolis & St. Louis train, slightly injuring both locomotives.

On the 20th, near Bluff Hall, on the Quincy, Alton & St. Louis Railroad, three cars of a mixed train, and one car and one truck were disabled. The cause is supposed to have been the falling of a brake-beam upon the track.

On the 20th, ten miles east of Truckee, on the Central Pacific Railroad, the locomotive, express car, mail car, baggage car and one sleeping car of an east-bound express train were thrown from the track.

On the afternoon of the 20th, a mile west of Eaton Rapids, Mich., on the Grand River Valley Division of the Michigan Central Railroad, the locomotive, baggage car and one coach were thrown from the track, the engine going upon its side in the ditch.

On the morning of the 21st, a mile east of New Durham, N. J., on the New Jersey Midland Railroad, an east-bound passenger train of four coaches and baggage car ran off the track, where it had sunk in the consequences of a flood, blocking the road several hours.

Shortly afterwards a local train ran off at the same place, and it was followed by three other trains.

On the morning of the 21st, near Montgomery, O., on the Marietta & Cincinnati Railroad, there was a collision between an east-bound accommodation and a west-bound freight, by which the baggageman, fireman, express messenger and front brakeman of the accommodation were killed, and both engines were utterly wrecked. The freight was running against orders on the other train's time. The Superintendent reported that the freight conductor's watch was 15 minutes slow; that he and his engine-man ran away as soon as the accident occurred; that the conductor had been arrested and a warrant obtained for the engine-man, and that the company would have them prosecuted for murder. An inquest was held, and a verdict rendered recommending their prosecution for manslaughter.

On the 22d, shortly after midnight, near Bement, Ill., on the Toledo, Wabash & Western Railroad, a steer got out of the rear door of a stock car in a running train and threw six cars from the track, delaying the train five hours.

On the 22d, a train on the Central Pacific Railroad ran off the track near Verdi, blocking the road a short time.

On the 22d, an engine and three cars of an extra freight train were thrown from the track and into the river by a switch which had been carelessly left open. The fireman was badly hurt.

On the 22d, a passenger train on the New York Division of the Pennsylvania Railroad, jumped the track at a switch in Trenton, N. J., blocking the track two hours.

On the afternoon of the 22d, near Greenville, Pa., on the Pennsylvania Coal Company's Railroad, a train of 36 empty coal cars struck a rock which had fallen upon the track near Greenville, and was thrown down an embankment 80 feet high, utterly wrecking it.

On the afternoon of the 22d, at Blissville, L. I., on the South Side Railroad of Long Island, as an engine was pushing twelve empty freight cars towards the Hunter's Point station, they encountered a large hog on the track, by which five of the cars were thrown off and the conductor, a brakeman and one other employee were fatally, and a fourth person slightly injured.

On the morning of the 23d, a short distance from Jersey City, an express train on the New York & Oswego Midland Railroad ran off the track and blocked the road for some time.

On the morning of the 23d, near Montpelier Junction, on the Vermont Central Railroad, a locomotive and one freight car were thrown from the track and down the bank by a misplaced switch, injuring the fireman.

In the afternoon of the 23d, a south-bound freight train on the Atchison & Nebraska Railroad ran over a cow about two miles above Atchison, Kan., which threw off several cars and tumbled two of them into the ditch.

Early in the morning of the 24th, as an east-bound freight train on the New York Central & Hudson River Railroad was crossing the Seneca River bridge, it broke in two and 10 or 15 cars were left on the bridge. A man was sent back to warn a following train, but failed to do so, for it soon ran into the detached cars, throwing the caboose from the track, while its own engine and several cars went off, and four cars fell into the river. Two men sleeping in the caboose were severely hurt.

On the 24th, four miles from Cameron, W. Va., on the Baltimore & Ohio Railroad, the spreading of the track caused the tender, express car and one coach to go down an embankment 15 or 20 feet high, while the other coaches

jumped the track. Three passengers were fatally and 15 less seriously injured.

On the afternoon of the 24th, at South Berwick, Me., on the Eastern Railroad, a spar rolled from a flat car of a south-bound freight train and caught under the wheel so as to break up eight cars.

On the evening of the 24th, a mile and a half west of Glade-water station, on the Texas & Pacific Railway, seven cars of a west-bound construction train were thrown from the track by running over an ox, and rolled down an embankment about 30 feet high. The conductor was killed and a brakeman and 13 other persons wounded, six of them dangerously.

On the morning of the 25th, between Merrick and Freeport, on the South Side Railroad of Long Island, the three rear coaches of a west-bound express train were thrown from the track and upset, owing, it is supposed, to the washing out of the road-bed by a storm, or the bad condition of the track. Two passengers were considerably hurt, and others slightly bruised, as the car turned over.

On the morning of the 25th, about three miles north of Norris, Mich., on the Detroit & Bay City Railroad, a south-bound express train ran over an ox, which threw the engine, tender and baggage car from the track. The engine-man jumped and was somewhat hurt; the fireman remained on the engine and was not injured.

On the 25th, as a freight train was being transferred from the south to the north track of the New York Central & Hudson River Railroad at Port Byron, N. Y., four cars in the middle of the train were thrown on their sides so as to block both tracks, making a serious obstruction at a time when the road was badly crowded.

On the 25th, between Trout Brook and Cook Falls, N. Y., on the New York & Oswego Midland Railroad, a west-bound passenger train was thrown from the track and the conductor and one passenger somewhat injured.

At noon on the 25th, near Atlantic, Iowa, on the Chicago, Rock Island & Pacific Railroad, the boiler of a locomotive exploded, killing the head brakeman and severely scalding the engine-man and fireman, and throwing the tender and two cars into the ditch. Pieces of the boiler were thrown a quarter of a mile.

On the evening of the 25th, a freight engine on the Cumberland Valley Railroad jumped the track in Harrisburg and remained off half an hour.

On the night of the 25th, 11 miles from Victoria, Texas, on the Gulf, West Texas & Pacific Railroad, a south-bound mixed train ran over a cow, by which the locomotive and nine freight cars were thrown from the track, the engine falling upon its side.

On the night of the 25th, between Ashland and Mahanoy Plain, on the Philadelphia & Reading Railroad, a passenger train ran off the track, damaging the engine and two cars so much that the train was delayed three hours.

On the night of the 25th, near Clinton, Iowa, on the track of the Iowa Midland road, a Chicago, Clinton & Dubuque Railroad train ran into a Chicago & Northwestern locomotive which had been left on the main track. Both engines were much damaged and a fireman was badly injured in jumping.

On the 26th, at Jamesburg, N. J., on the Amboy Division of the Pennsylvania Railroad, a freight train ran off the track and tore away part of the depot and wrecked seven cars.

On the 26th, near Plano, Texas, on the Houston & Texas Central Railroad, a tie fell upon the track from a mixed train, and wrecked four cars.

About 5 o'clock on the morning of the 27th, on the New York Division of the Pennsylvania Railroad, as the north-bound Adams Express train was passing through Newark, an empty sleeping car attached to the train jumped the track and ran into a freight car standing on a side track, wrecking both cars.

On the morning of the 27th, near Lisle, Ill., on the Chicago, Burlington & Quincy Railroad, a car in the middle of an east-bound stock train jumped the track at a switch, and occasioned the breaking up of seven box cars and the killing of considerable stock. The road was blocked about two hours. The weakness of a switch-bar, which permitted the spreading of the switch rails, is reported as the cause.

On the 27th, near Johnston, Pa., on the Pennsylvania Railroad, while a passenger train was running 35 miles an hour, the second coach jumped the track and ran into a river bank, doubling up the whole train and tearing up the track.

On the 27th, in Birmingham, south of Pittsburgh, Pa., three cars of a stock train on its way to the East Liberty stock yards, jumped the track at a bridge, breaking in two the train, which caused the locomotive to give such a jerk as to pull out the draw-bar from another car.

On the 27th, in the Chicago freight yards of the Chicago, Burlington & Quincy Railroad, the locomotive and several cars of a freight train were thrown from the track by a misplaced switch, damaging engine and cars.

About noon on the 27th, a switching engine on the Pennsylvania Railroad ran into the rear of a Union Line freight train near Harrisburg, wrecking the car and badly damaging the engine.

On the afternoon of the 27th, at Pond Creek, Ill., on the Chicago, Rock Island & Pacific Railroad, an express train was thrown from the track "in consequence of the removal of a pin from a switch." The road was blocked about six hours until a track could be laid around the wreck.

On the evening of the 27th, a car of a fast-freight train on the New York Division of the Pennsylvania Railroad was thrown from the track while passing through Bergen Cut. Trains were delayed some time.

On the evening of the 27th, at Mountville, Ohio, on the Central Ohio Division of the Baltimore & Ohio Railroad, a west-bound express train ran into a freight train which was standing on the main track when it should have been on a siding 17 minutes earlier. The express engine-man was killed and the mail agent and one passenger injured.

On the night of the 27th, at Chester Valley Junction, Pa., on the Pennsylvania Railroad, a west-bound passenger train ran into the rear of a stock train, breaking up several cars and throwing the engine, express car and baggage car of the passenger train from the track. A flagman was killed.

On the 28th, a mile and a half west of Terre Haute, Ind., on the St. Louis, Vandalia, Terre Haute & Indianapolis Railroad, an east-bound way train jumped the track, on account of the spreading of a switch, and ran into the engine of a gravel train which was standing on a siding, destroying both engines, injuring the late Superintendent of the road (Mr. J. W. Conlogue), the acting Paymaster, the engine-man, fireman and two other persons.

On the 28th, in Portland, Me., on the Elm street bridge of the Boston & Maine Railroad, there was a collision between an accommodation and a gravel train by which eight platform and dump cars were badly broken and one man injured.

On the evening of the 28th, at Johnson's station, on the New York & Oswego Midland Railroad, as a freight train was taking a switch, a mail train ran into its rear, wrecking several cars and disabling the engine.

On the night of the 28th, at Arlington, Vt., on the Vermont Central Railroad, there was a butting collision between a mail train and an extra train which was ten minutes ahead of time, wrecking both engines and several cars.

On the morning of the 29th, at Arlington, on the New York Boston & Montreal (late Harlem Extension) a south-bound mail train ran into the head of a freight train which should have been on a siding, breaking the car behind the mail train tender, thrusting one freight car under the end of another, and blocking the road six hours or more.

On the morning of the 29th, an axle broke under the baggage

car of a passenger train leaving Chicago on the Chicago, Rock Island & Pacific Railroad, as it was opposite the company's shops, a few miles south of the Chicago depot, throwing two cars from the track and delaying the train two hours.

On the morning of the 29th, two miles east of Muir, Mich., on the Detroit & Milwaukee Railroad, the locomotive of a west-bound passenger train threw off a driving wheel, and soon after a freight train following ran into the rear car, which carried immigrants, crushing nearly through it, and compressing the next car, also full of immigrants, into a length of eight feet, killing six persons and injuring ten. The passenger train sent back a brakeman with a flag, who, though told to go farther, and having plenty of time, stopped at such a distance that the freight, coming on a down grade and a slippery track, was not stopped in time, though the engine was reversed and brakes called as soon as the light was seen. The coroner's jury found the flagman guilty of criminal negligence for not going back farther with the flag, the engineer of the freight train for running too fast, the conductor for not having the brakemen at their posts, and the brakemen for not being at their posts.

On the morning of the 29th, on the Eastern Railroad, between Rawley and Knight's Crossing, Mass., a telegraph pole which was lying on the edge of the bank of a cut rolled down upon the track (started by the jarring of the train, it is supposed) and caused 14 cars to be thrown off and wrecked.

On the morning of the 29th, a south-bound passenger train on the New York Central & Hudson River Railroad came upon an empty caboose car which was standing on the track near Break Neck Tunnel, a little south of Cold Spring, having broken from a preceding freight train. It was seen in time to prevent accident and pushed on to Fort Montgomery, where the freight was waiting for it, having flagged it at the tunnel. There was an express following but a few minutes behind, and it ran into the sleeping coach at the rear, breaking it up badly, and tumbling it and the two sleepers ahead from the track. Three passengers were injured, and the engine-man of the striking train was badly hurt in jumping, and his engine badly wrecked. The conductor of the first express was found guilty of failing to flag the second express.

On the 29th, three miles east of Roanoke, Ind., on the Toledo, Wabash & Western Railroad, there was a collision between an east-bound and a west-bound freight train, crushing both engines and twelve or fourteen cars of corn. The fireman of the west-bound train was injured. The west-bound train is said to have been running on the other train's time, both conductor and engine-man having "forgotten."

On the 29th, at Morris, Ill., on the Chicago, Rock Island & Pacific Railroad, one freight train ran into another, slightly damaging a locomotive.

On the 29th, at Columbia City, Ind., on the Pittsburgh, Fort Wayne & Chicago Railway, a passenger train ran through an open switch and into a freight train on the siding.

On the afternoon of the 29th, a mile west of Osage Center, N. H., on the Great Falls & Conway Division of the Eastern Railroad, there was a butting collision between two freight trains, utterly wrecking both engines and four cars and severely injuring a conductor. The up train claimed to be on time and the down train to have special orders by telegraph.

On the morning of the 30th, near Rock-by's Rock, on the Baltimore & Ohio Railroad, one freight train ran into another, which was switching out of time and had no flag out.

On the 30th, at Summit, Iowa, a freight train on the Des Moines Valley Railroad was thrown from the track by running over a bull, blocking the track six hours.

On the 30th, a train on the Hackensack Branch of the Erie Railway was thrown from the track at the junction with the main line near Rutherford Park, N. J., by a misplaced switch.

On the afternoon of the 30th, as a Pennsylvania Railroad locomotive was crossing the Lebanon Valley bridge at Harrisburg, the rear wheels of the front truck got off the rails and blocked one track on the bridge nearly an hour.

On the evening of the 30th, near Waldron, Ind., on the Indianapolis, Cincinnati & Lafayette Railroad, several cars loaded with stone were ditched, blocking the road all night.

On the night of the 30th, at Thiamsville, Ont., on the Great Western Railway of Canada, an excursion train said to be carrying 1,000 passengers, ran into the rear of a freight train which was taking a siding at the time to permit the excursion train to pass, telescoping two or three coaches and injuring 16 persons. It was very foggy at the time.

On the morning of the 31st, just south of Oxford, N. Y., on the New York & Oswego Midland Railroad, a north-bound coal train broke into three parts while on a trestle, and the cars broken off afterwards ran into the engine with such force as to wreck several cars.

On the afternoon of the 31st, as a train on the St. Louis & Southeastern Railway was leaving East St. Louis for Belleville, Ill., carrying a circus company, it jumped the track at a switch, and a coach carrying the performers, after being dragged some distance over the ties, turned on its side, injuring two passengers.

Early in the month, a west-bound milk train on the New York & Oswego Midland Railroad ran off the track at Unionville, N. Y., breaking up one car.

About the middle of the month, on the coal piers at Watkins, N. Y., there was a collision between an engine and a train which was descending a long trestle. The men on the engine jumped, and

After the shock the valve of the engine flew open and it ran to the lake end of the trestle, leaped the bumper, cleared two canal boats, and landed about 50 feet out in Seneca Lake.

Near the end of the month, at Parkville, on the New York & Oswego Midland Railroad, the rear coach of a passenger train got off the track, and when the conductor put on the brakes the car jumped clear from the track against a rock, throwing the conductor 20 feet and bruising him severely, and then landed with one end so far over the Beaver Kill that it was nearly balanced.

This is a total of 150 accidents, by which 63 persons were killed and 135 injured. Nineteen of the accidents caused death or death and injuries, 30 caused injuries but not death, and 102 caused neither death nor injuries. There were six days on which there were eight, nine or ten accidents, the total in the six being 55, and there was one day (the 14th) on which we have none reported. There were frequent freshets during the month, which multiplied accidents, but there were also a vast number of collisions and other casualties due to gross carelessness.

These 150 accidents are classified as follows as to their nature and causes:

DERAILMENTS.	
Unexplained.....	37
Cattle on track.....	11
Misplaced switch.....	9
Washing out of road-bed.....	9
Obstruction washed upon track.....	3
Obstruction falling from load of car.....	3
Failure of bridge or trestle.....	3
Obstruction falling from above road-bed.....	2
Malicious obstruction.....	2
Broken rail.....	2
Spreading of switch.....	2
Broken wheel.....	2
Broken axle.....	2
Broken flange.....	1
Fall of brake beam.....	1
Spreading of rails.....	1
Open drain.....	1

Mistaking signal.....	1
Failure to flag when frog was removed.....	1
Runaway going through end of track.....	1-94
COLLISIONS.	
Rear collisions.....	31
Head collisions.....	12
Unexplained.....	10-51
Car crushed by wrecked car.....	1
Boiler explosion.....	1
Breaking of driving axle.....	1
Total.....	150

Besides the nine derailments, two of the rear collisions were caused by misplaced switches. Five of the latter were by runaway trains, cows, or engines, and four were due to the breaking of trains in two. A failure to flag approaching trains was the occasion of six accidents.

For the twelve months ending with August our record stands as follows:

Month.....	Accidents.	Killed.	Injured.
September, 1872.....	71	24	104
October.....	99	29	102
November.....	103	37	114
December.....	112	42	133
January, 1873.....	128	40	199
February.....	126	25	126
March.....	112	18	92
April.....	101	23	88
May.....	79	10	113
June.....	90	12	104
July.....	80	15	80
August.....	63	63	155
Totals.....	1,303	341	1,410

In this we have made a correction in the July report published last month, which reduces the number of injured by 39, there having been reported 42 hurt by an accident in Minnesota by which only three were injured.

Last year (when our report was exceptionally imperfect, however, we reported for August 63 accidents, by which 15 were killed and 49 injured.

The report this year shows a shockingly great and unaccountable number of accidents, many of which were exceptionally serious. The freshets of the month might account for some increase, especially in the slighter accidents, and probably the great accidents attracted so general attention to the subject that such casualties were more fully reported in the newspapers; but this cannot account for the enormous number, which was exceeded only in the month of January, when half the railroads in the country were running on snow. And an examination of the several cases indicate that no natural cause special to the time had anything to do with the greatest portion of them, and especially the more serious ones, but there seems to have been an epidemic of disorder and disobedience. Several of the severest were the direct fruit of a clear disobedience of orders, and in three cases train men were recommended for indictment for criminal negligence, while in one they were actually indicted. A severer discipline seems to be the great lesson taught by the frightful record of the month.

The average number of accidents per day, according to our reports since the beginning of the current year, has been: January, 5.74; February, 4.75; March, 3.61; April, 3.37; May, 2.55; June, 3.00; July, 2.90; August, 4.84; for the eight months, 3.43.

The railroads in most parts of the country are now having or beginning to have their heaviest traffic, and crowding of roads increases danger, while the increase in the number of trains of course multiply the individuals which are subject to accident.

CHICAGO RAILROAD NEWS.

Chicago, Danville & Vincennes.

On the 1st, the new Woodruff "rotunda" parlor and sleeping cars were put on the road to make regular trips between Chicago and Evansville, Ind. At Evansville connection is made with the St. Louis & Northwestern for Nashville and points beyond, to which the new route will be very direct. The train with these cars leaves Chicago at 6:30 p. m.

Exposition Rates.

The Superintendents of the Chicago railroads held a meeting recently to consider the subject of reducing rates during the Chicago Exposition, and though no action was taken, the general expression of opinion was against making any reduction.

Chicago, Rock Island & Pacific.

This company has issued the following new schedule of rates for suburban traffic, by which the fares for family tickets are considerably reduced:

CHICAGO TO	Single Fare.	Round Trip.	INDIVIDUAL TICKETS.				
			10-ride Tickets.	100-ride Tickets.	Three M'ths.	First Six M'ths.	Yearly.
Rock Island shops.....	20	30	\$1 00	\$8 00	.....	.....	.....
Englewood.....	25	35	1 25	10 00	\$14 00	\$25 00	\$34 00
Normal.....	27	40	1 30	11 00	16 00	28 00	26 00
Auburn.....	30	50	1 45	11 50	18 00	31 00	29 00
South Englewood.....	35	55	1 55	12 50	19 50	34 00	30 00
Jimmy Junction.....	40	60	2 00	14 00	21 00	36 00	31 00
Ninety-ninth street.....	40	60	1 90	13 50	20 00	35 00	30 00
Prospect avenue.....	70	100	1 90	15 00	20 00	35 00	32 00
Tracy avenue.....	70	100	1 90	15 00	21 00	36 00	33 00
Morgan avenue.....	75	105	2 20	17 00	23 00	38 00	35 00
Blue Island.....	55	80	2 40	18 50	24 00	41 00	37 00

One hundred-ride family tickets, good on all regular trains, will be issued at following rates: Chicago to Washington Heights, \$32; Chicago to Blue Island, \$29. Ten and 100-ride tickets, unless otherwise specified, will be good until used, and by whomsoever presented. The distance to Englewood is seven miles, to Washington Heights 12 miles, and to Blue Island 16 miles. The 100-ride family tickets therefore make rates 1.83 cents per mile to Washington Heights (which includes the stations between Jimmy Junction and Blue Island), and 1.81 cents per mile to Blue Island, but these are good for any member or visitor of a family. The ordinary 100-ride ticket is at the rate of 1.25 cents per mile to Englewood and 1.16 cents to Blue Island. The yearly season tickets, counting 300 round trips per year, make the fares from 1.07 cents per mile (to Englewood) to 0.726 cent (to Blue Island).

Chicago & Northwestern.

The car shop, round house and blacksmith shop, which this

RAILROAD EARNINGS FOR AUGUST, 1873.

NAME OF ROAD.	Mileage.		Increase.		Earnings.		Inc.	Dec.	Per cent.	Earnings per mile.	
	1873.	1872.	Miles.	P. c.	1873.	1872.				1873.	1872.
Atlantic & Great Western.....	539	539			\$477,262	\$472,110	\$5,152		136	\$883	\$76
Atlantic & Pacific.....	328	328			126,435	108,888	17,547		162	385	338
Burlington, Cedar Rapids & Minnesota.....	334	361	73	28	108,100	93,420	14,680		158	324	278
Central Pacific.....	1,218	1,094	124	11%	1,258,500	1,271,129		\$13,129	1	1,033	1,181
Chicago & Northwestern.....	1,404	1,353	51	3%	1,264,094	1,196,740	67,354		74	918	84
Cleveland, Col., Cin. & Indianapolis.....	470	470			426,283	411,252	25,031		156	907	854
Erie.....	971	964	7	(%)	1,774,570	1,653,29	121,278		73	1,222	1,115
Illinois Central.....	1,109	1,109			748,634	783,255		34,621	45	675	706
Indianapolis, Bloomington & Western.....	344	212	132	61%	156,973	117,408	39,565		224	410	554
Kansas Pacific.....	612	672	75	6%	328,189	349,382		21,193	61	488	510
Lake Shore & Michigan Southern.....	1,170	1,095	75	6%	1,522,531	1,459,360	63,171		81	1,253	1,323
Marietta & Cincinnati.....	284	284			173,409	162,521	10,888		64	611	572
Michigan Central.....	787	715	72	9%	767,500	560,308	206,192		118	738	512
Milwaukee & St. Paul.....	1,236	1,241	115	10%	1,236,500	1,153,29	83,211		67	921	805
Missouri, Kansas & Texas.....	784	547	237	43%	320,018	171,945	148,073		86	4	314
Mobile & Ohio.....	517	517			202,605	200,756	1,849		63	392	388
Ohio & Mississippi.....	293	393			301,998	204,243	97,755		25	768	749
Pacific, of Missouri.....	471	471			325,098	316,199	8,899		23	690	671
St. Louis, Alton & Terre Haute, Main Line.....	261	266			127,777	125,538	2,239		13	480	472
St. Louis & Iron Mountain.....	71	71			54,066	41,672	12,414		29	762	587
St. Louis, Kansas City & Northern.....	29	258	31	11	201,190	194,155	7,035		23	69	753
St. Louis & Southeastern.....	583	583			251,312	227,522	23,790		10	431	390
Toledo, P. & W. & Warsaw.....	349	349			113,163	92,568	20,595		23	324	265
Toledo, Wabash & Western.....	237	237			130,393	127,850	2,543		2	550	539
Toledo, Danville & Vincennes.....	628	628			442,309	614,175	171,866		47	1,023	978
Chicago, Danville & Vincennes.....	157	132	25	19	65,008	57,375	7,633		14	418	435
Baltimore & Ohio.....	917	873	44	5	1,414,596	1,281,848	132,748		10	1,543	1,467
Total.....	16,528	15,512	986	6%	\$13,939,678	\$12,961,700	\$977,978	\$7.06	71	\$857	\$834
Total increase.....											

RAILROAD EARNINGS, EIGHT MONTHS ENDING AUGUST 31.

NAME OF ROAD.	Mileage.		Increase.		Earnings.				Earnings per Mile.					
	1873.	1872.	Miles	P.c.	1873.	1872.	Increase.	Decrease.	Per cent.	1873.	1872.	Inc.	Der.	P.c.
Atlantic & Great Western.....	539	539	.....	.....	\$3,348,254	\$3,223,664	\$124,590	.....	3%	\$6,212	\$5,981	\$231	.....	3%
Atlantic & Pacific.....	328	328	.....	.....	856,914	708,421	147,493	.....	20%	2,609	2,159	450	.....	20%
Burlington, Cedar Rop. & Minn.....	334	261	73	28	678,772	577,217	101,555	.....	17%	2,032	2,212	.....	\$180	8%
Central Pacific.....	1,218	1,094	124	11%	8,791,053	8,052,755	738,298	.....	9%	7,209	7,361	.....	152	2%
Chicago & Northwestern.....	1,399	1,340	59	4%	8,522,751	7,907,614	615,137	.....	12%	6,092	5,677	415	.....	7%
Clev., Col., Cin. & Indianapolis.....	470	419	60	14%	3,178,925	2,857,144	321,781	.....	11%	6,764	7,042	.....	278	4%
Erie.....	971	961	10	1	12,633,961	12,167,349	466,712	.....	3%	12,013	12,661	358	.....	2%
Illinois Central.....	1,109	1,109	.....	.....	5,173,590	5,005,738	167,852	.....	3%	4,661	4,511	151	.....	3%
Indianap., Bloomington & W't'n.....	278	212	66	31	975,567	869,610	105,957	.....	12%	3,509	4,102	.....	503	14%
Kansas Pacific.....	612	672	.....	.....	2,301,163	2,322,890	.....	\$20,727	.....	3,426	3,457	31	.....	0%
Lake Shore & Mich. S. Southern.....	1,140	1,029	111	10%	12,861,180	11,149,247	1,711,933	.....	13%	11,281	10,835	446	.....	4%
Marietta & Cincinnati.....	284	284	.....	.....	1,310,617	1,217,002	93,615	.....	17%	5,037	4,285	752	.....	17%
Michigan Central.....	733	715	18	2%	4,890,008	4,441,491	448,517	.....	11%	6,589	6,072	517	.....	8%
Milwaukee & St. Paul.....	1,231	1,082	149	13%	5,219,801	3,978,230	1,241,571	.....	31%	4,420	3,677	743	.....	21%
Missouri, Kansas & Texas.....	676	502	174	34%	2,069,837	1,032,116	1,037,721	.....	100%	3,662	2,056	1,606	.....	48%
Mobile & Ohio.....	517	517	.....	.....	1,701,254	1,609,508	91,746	.....	5%	3,285	3,277	8	.....	0%
Ohio & Mississippi.....	393	393	.....	.....	2,331,175	2,131,578	200,597	.....	11%	6,039	5,431	628	.....	11%
Pacific, of Missouri.....	471	413	58	14	2,321,890	2,216,640	105,250	.....	4%	4,930	5,367	.....	437	8%
St. L., Alton & Terre Haute, main line.....	266	266	.....	.....	888,860	888,860	.....	.....	.....	3,497	3,342	155	.....	4%
St. Louis & Iron Mountain.....	71	71	.....	.....	397,633	317,317	80,316	.....	25%	5,611	4,461	1,150	.....	26%
St. Louis & Iron Mountain.....	289	233	54	23	1,514,518	1,434,551	79,967	.....	5%	5,344	6,104	.....	760	12%
St. Louis, Kan. City & Northern.....	583	583	.....	.....	1,741,891	1,608,197	133,694	.....	8%	2,992	3,063	.....	101	3%
Toledo, Wabash & Western.....	628	628	.....	.....	3,810,626	3,709,577	101,049	.....	3%	6,100	6,050	50	.....	1%
Central of New Jersey.....	291	291	.....	.....	5,635,895	4,755,286	880,609	.....	18%	19,367	16,341	3,026	.....	18%
Chicago, Danville & Vincennes.....	135	132	3	2%	429,167	393,798	35,369	.....	7%	3,179	3,021	158	.....	5%
Total.....	14,976	14,067	909	6%	\$93,838,771	\$84,549,710	\$9,289,061	\$9,289,061	11	\$6,266	\$6,111	\$155	.....	4%
Total increase.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

company began in Spring, are in a good state of progress. The machinery, which is now being bought, will cost about \$100,000. By November 1 it is said that the company will employ at least 350 men in the shops and in the work of construction. The company ran trains through the new tunnels for the first time on Monday, September 15, to Winona, and on Monday evening a large party, consisting of railroad and business men, started on an excursion to Lake Kampeska, the Dakota terminus of the Winona & St. Peter road.

The great outcry about the proposed raising of the tariff on grain by this company and the Milwaukee & St. Paul has, at the present time, been reduced to such small proportions that it will not be likely to create



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CONTENTS.

CONTRIBUTIONS:	Page	GENERAL RAILROAD NEWS: Page	
The Railroad Question in California.....	379	Old and New Roads.....	387
Shoulders at Wheel Seats.....	380	EDITORIAL PARAGRAPHS.....	386
EDITORIALS:		CHICAGO RAILROAD NEWS.....	383
The Transportation Question in New York.....	384	MISCELLANEOUS:	
Strength of Riveted Joints.....	384	Technical Regulations of the Union of German Railroad Administrations.....	379
The Early Grain Movement.....	385	The International Patent Congress.....	380
The Midland's Line to Buffalo.....	386	Train Accidents in August, 1873.....	381
Record of New Railroad Construction.....	386	Railroad Earnings for August, 1873, and for eight months ending August 31, 1873.....	383
GENERAL RAILROAD NEWS:		The General Freight Agents' Meeting at Cleveland.....	383
Elections and Appointments.....	386		
Personal.....	386		
Traffic and Earnings.....	386		

THE TRANSPORTATION QUESTION IN NEW YORK.

The time of the session of the Senate Transportation Committee in New York was made the occasion of a public meeting in the hall of the Cooper Union, called by a large number of prominent merchants and attended by a few, at which several addresses were made, having for their chief burden the danger that New York might lose its pre-eminence in some branches of exports, with a consequent effect on its import trade. So far the meeting deserves little attention outside of New York; for we presume that no other part of the country cares or should care where the imports and exports of the country are made, if only they are made to the best advantage of the country at large. Any scheme which offers to cheapen and otherwise facilitate transportation between producers and consumers deserves the nation's attention; any scheme which simply proposes to make one port or distributing center equal or nearly so to some other which is or will be sufficient for the whole traffic, deserves only the attention of the ports themselves. A better connection between producers and consumers is what is wanted; whether it be by Montreal or New Orleans, New York or Baltimore, does not concern the nation, but only minute parts of the nation.

The speeches made at this meeting were very weak, chiefly for lack of knowledge. It seemed to be felt that New York is losing its pre-eminence as an exporter of grain, because it no longer receives so large a proportion of the grain sent to the sea-board as it did a few years ago, and the only reference to a rival was to Montreal. The opinion seemed to prevail, however, that the facilities of other cities have been increasing while New York has stood still, and that Baltimore, Philadelphia and Boston are thereby infringing on New York's trade. It is not easy to understand how this feeling has arisen. Except in terminal facilities there has been no increase in the immediate feeders of any of these cities except New York for some years, and it is entirely true that at any roads ending at ports south of New York are good tributaries to New York as well as to those ports. The enormous system of the Pennsylvania Railroad Company could be scarcely more valuable to New York than it is if it did not touch Philadelphia; the Baltimore & Ohio, so largely the property of Baltimore and of Maryland, is compelled to carry traffic bound to New York, whether it will or no. New York certainly cannot complain of inferior facilities compared with its neighbors, unless it is in facilities for transfers, which in many particulars are shamefully poor in New York, whatever they may be elsewhere. And Montreal itself, which is the most dangerous competitor for the grain traffic, has hardly any improvements in its routes, but seems only to have discovered late what its natural advantages were worth. It, however, is to have improvements in its approaches which to New York are threatening indeed.

To judge from the speeches, there was no definite idea of the means of relief. The resolutions were a little more definite, affirming the need of double-track railroads exclusively for freight, denouncing the watering of stock and abuses in railroad management, and (which was well done) frequent and great changes in freight rates, and affirming that the policy with regard to the Erie Canal "should be such as to enable a successful competition for the transportation of the products of the West," declaring that the building of American ships should be encouraged, and expressing sympathy with the Western demand for cheaper transportation. The meeting ended with the organization of the "New York Cheap Trans-

portation Society," an association which might be made to do much good if it would collect, compile and publish accurate information on the subject.

During the four days' session of the Senate Transportation Committee a great many people were heard on a great variety of subjects, it being the purpose of the Committee, apparently, to hear any one who has anything to say. The Committee is composed of Senator William Windom, of Minnesota; John Sherman, of Ohio; Senator Davis; Roscoe Conkling, of New York; Senator Norwood, of Georgia, and S. B. Conover, of Florida. It has for its object the investigation of the general subject of transportation, and of course does not lack for work or material. Well-directed investigation by it might be very fruitful in results, especially as its report would doubtless be widely published and read.

At the session in New York there appeared advocates of a national subsidy for a ship canal around Niagara Falls (which would be simply duplicating the work which the Canadians have in hand), of an enlargement of the Erie Canal, of a double-track road exclusively for freight from New York to Chicago or elsewhere in the Northwest; and explanations were made of the organization of the "Blue Line" and the "Empire Line," of the stock issues of the New York Central Railroad, etc., etc., and the Committee left New York to visit the location of the proposed Lake Champlain & Hudson River ship canal, the Caughnawaga and St. Lawrence canals, the Erie Canal, the Niagara ship canal, etc.

Doubtless the alarm of New York at the progress Montreal is making in securing Western grain for export is fully justified, though its progress is not really very great yet, and is formidable rather for what it is likely to be than for what it is. But there has been a diversion with which Montreal has nothing to do. New York has almost ceased to be a distributing center of grain for domestic consumers. An improvement in the method of doing business has to a great extent done away with such centers. Now shipments are made in cars loaded at the station nearest the farmer in the West which run through to the station nearest the consumer in the East, and the necessity of an intermediate produce merchant and of machinery for making transfers is done away. More and more of the domestic traffic in grain (which is, after all, the great traffic) is done in this way, and, unless there should be a large decrease in water rates, it is probably that only New York and some towns on the canal route will much longer obtain their supplies for consumption otherwise.

As for New York, if the Canadians complete what they have begun, it is not easy to see how anything that can be done will give it means of access to the West as cheap and capacious as Montreal will have. About 70 miles of ship canal, we believe, will be used in reaching Montreal, and the rest of the route is on the lakes and on immense rivers which are almost as cheap to navigate. Even were the Erie made a ship canal of equal capacity, its length would put New York to a great disadvantage. The same may be said, though in a less degree, of the proposed Oswego ship canal, which itself would be reached only after passing through about one-half of the length of the Canadian canals. The Champlain & Hudson Canal seems quite preposterous as a carrier of grain to New York for export, for why should grain be carried due south 400 miles, partly by canal, to be further from Liverpool than when it started? This problem, however, is chiefly of local and not national interest. Producers and consumers will be well enough pleased to have the grain go by Montreal—or Hudson's Bay, for that matter—if the one is thus able to get more for it and the other to pay less. If there had been no Falls of Niagara and no St. Lawrence rapids, doubtless no one would have thought of exporting grain from the lakes by any other than the St. Lawrence route; and if the Canadians will provide effectual remedies for these natural obstacles, they can hardly fail of the advantage, whatever it may be, of having the chief American grain exports pass through their borders. These exports, it can never be too well remembered, form but a fraction of the entire grain traffic, however, and neither New York nor railroads from New York westward are going to be out of business should Canada take the grain exports. The railroads never have carried much grain for export, and they have an opportunity of largely increasing their grain traffic by providing for domestic consumption. All the lines having their eastern termini on the Lakes, on Lake Michigan especially, would be very much benefited by a great reduction in the cost of transportation to the sea-board; and we have heretofore given some reasons why such an improvement might affect favorably the Eastern roads even, which would be able to more nearly equalize eastern and western shipments, and carry merchandise at good prices in cars now moved empty instead of adding the lowest priced freight in cars to be hauled back empty.

STRENGTH OF RIVETED JOINTS.

At the meeting of the Royal Society (English), on April 24, a paper "On the Durability and Preservation of Iron Ships and on Riveted Joints," by Sir William Fairbairn, was read, from a report of which we extract the following:

"On the subject of riveted joints, the author pointed out that in machine riveting there was much greater security than in hand-riveting, on account of the rivet holes being properly filled out. Such a thing as a loose rivet might occur in hand-riveting, but never in machine riveting. He gave the rates of work as sixteen rivets per minute with a lever-riveting machine, ten rivets per minute with a steam-riveting machine, and 0.66 per minute by hand. Former experiments had shown that, taking the strength of a solid plate at 100, the strength of an equal width of joint would be 70 if the joint were double riveted, and 56 if it were single riveted. In other words, 30 per cent. of strength was lost in a double and 44 in a single-riveted joint. It had appeared to some engineers that the process of punching was injurious to the plates, and in many cases recourse had been had to drilling to form the rivet-holes. With good iron, no sensible injury resulted from punching the rivet holes. With rigid and bad plates, on the other hand, the plate would crack between the rivet holes, and it would have to be discarded. The advantage of the punching process lay in its testing the quality of the iron. It had been found in certain cases that the rivets sheared across with a less force when in drilled than when in punched holes, and this had been attributed to the sharpness of the edges of the drilled holes. This point was elucidated by Colonel Inglis' experiments on joints with rivet holes, the edges of which were rounded. These experiments corroborated the author's as to the superiority of punched to drilled holes. According to Colonel Inglis, the difference of strength of the rivets was only 2½ per cent.; the superiority of the joints with rounded holes was as much as 29 per cent. on the average. A riveted joint, said the author, may give way either—(1) By the tearing of the plates from the rivet-hole to the edge of the plate; (2) by the tearing of the plates from rivet-hole to rivet-hole; (3) by the shearing of the rivet. When the plate gave way by tearing from the rivet-hole to the edge of the plate, a bending stress was induced in that part of the plate which was in front of the rivet. When the plate gave way by tearing from rivet-hole to rivet-hole it was commonly assumed that the stress on the part of the plate between the rivets was a uniformly distributed stress. This was not strictly correct. The want of uniformity of stress would cause the plate to give way with a lower average intensity of stress than that which corresponded to the ultimate resistance of the plate to tension. It was impossible to calculate how much the plate might be weakened by the want of uniformity in the distribution of the stress. Probably the loss of strength due to this cause was very small in ductile plates; the weakening, however, might account in part for the apparent loss of strength of the plates at joints as compared with the same plates broken in an unperforated condition. This loss of strength had been hitherto ascribed entirely to injury done to the plate in the punching process. When the rivet gave way by shearing, the stress on the section was also not uniform. In consequence of the great deformation of the rivet before fracture it was subjected to bending as well as shearing action. The friction between the plates, induced by the contraction of the rivets in cooling, had been supposed sometimes to add to the apparent resistance of the rivet to shearing. A considerable displacement of the plates, however, took place before ultimate fracture, and the deformation of the rivets was so great that it could hardly be supposed that they exerted any tension, holding the plates together at the moment of fracture. The friction should, therefore, be entirely neglected in estimating the ultimate resistance of riveted joints, and this indeed had been done by most English writers. The theory that the sharp edges of drilled holes induced a cutting action, which diminished the strength of the rivets, had suggested to Colonel Inglis, R. E., to try whether a greater resistance in the joint could be obtained by purposely rounding the edges of the rivet holes. Some experiments had been made for Colonel Inglis by Mr. Kirkaldy, from which it appeared that the resistance of the rivet was increased 10 per cent. by this rounding of the edges of the rivet holes. The following table is a summary of results obtained by the author:

Experiments on the Ultimate Resistance of Rivets to Shearing.

No. of experiments.	Sectional area of rivet, in square inches.	Shearing resistance of rivet, in tons.	Elongation of joints, in inches.	REMARKS.	
1.	.84	554	10.819	19.528	Single shear; punched holes; machine riveted.
2.	.82	523	10.879	27.006	Single shear; punched holes; hand riveted.
3.	.84	554	10.257	18.814	Single shear; drilled holes; machine riveted.
4.	.82	523	10.739	20.339	Single shear; drilled holes; hand riveted.
5.	.84	554	11.221	20.254	Single shear, drilled edges of plates rounded; machine riveted.
6.	.82	523	11.192	21.197	single shear; punched and counter-sunk; hand riveted.
7.	.84	554	10.850	19.584	Single shear, drilled and counter-sunk; machine riveted.
8.	.82	523	11.234	21.276	Single shear; drilled; edges rounded; counter-sunk; hand riveted.
9.	.82	523	23.375	44.270	Double shear; punched; hand riveted.
10.	.82	523	20.694	39.174	Double shear; drilled; hand riveted.
11.	.82	523	21.313	46.047	Double shear; drilled; edges rounded; hand riveted.
12.	.82	523	26.464	50.121	Double shear; drilled; edges rounded and counter-sunk; hand riveted. (This rivet did not shear. The plate broke away.)

"The following are general conclusions: (1) Joints with drilled holes are weaker, and elongate less before fracture than joints with punched holes; (2) hand-riveted joints are somewhat stronger than machine-riveted joints; (3) there is a decided increase in the strength of the rivets when the edges of the rivet-holes are rounded, so as to diminish their cutting action. The average of four experiments on joints with drilled holes, compared with the average of four experiments on joints with punched holes, showed that the rivets in the former were 1.36 tons per square inch, or 6½ per cent. weaker than the rivets in the latter. The elongation was also 26 per cent. less with drilled than with punched holes. The mean of three experiments on hand-riveted joints, compared with the mean of three experiments on machine-riveted joints, showed an excess of shearing resistance in the rivets in the hand-riveted joints, amounting to 1.495 tons per square inch, or 7½ per cent. The hand-riveted joint also elongated 26 per cent. more than the machine-riveted joint. The mean of three experiments on joints with rounded holes, compared with the mean of three experiments on joints with unrounded punched holes, and with

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Fig.1

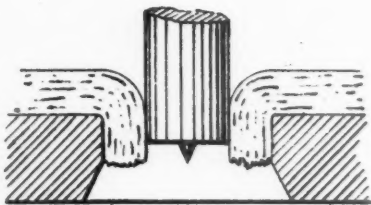


Fig.2

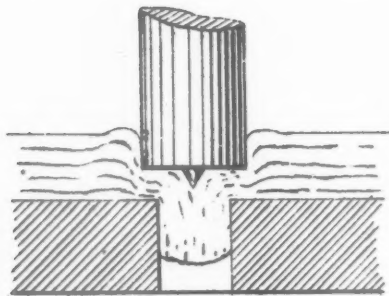
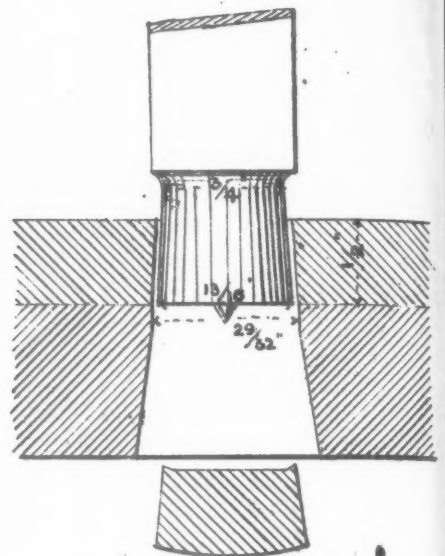


Fig.3



BOILER PLATE PUNCHES.

Fig.4

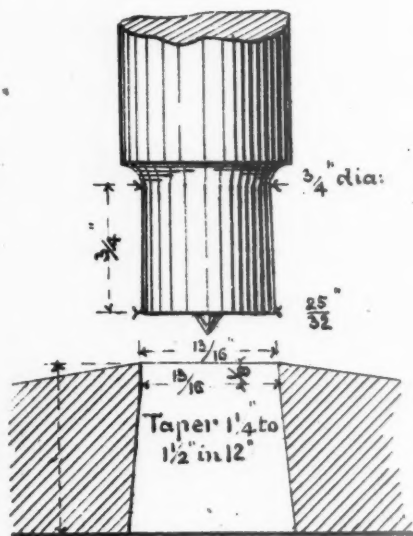


Fig.5

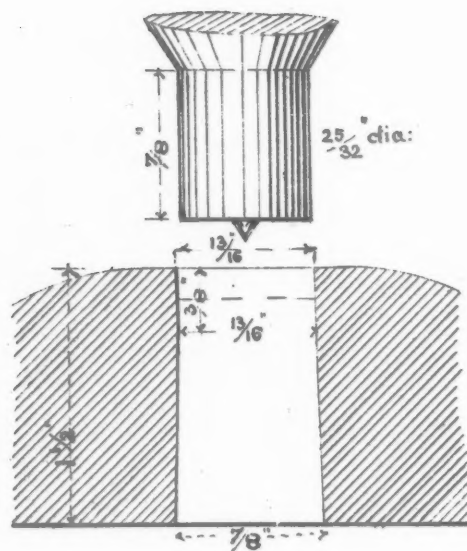


Fig.6

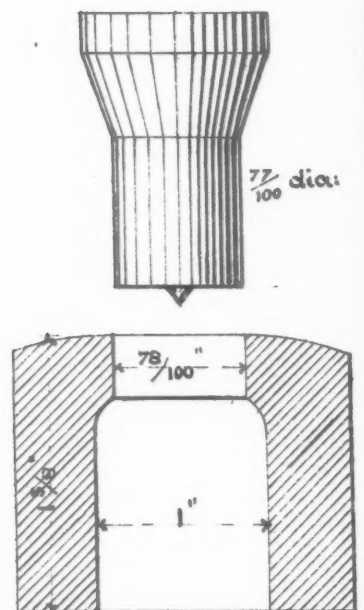


Fig.7

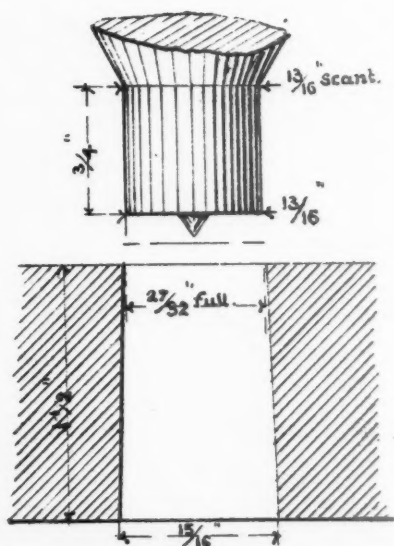


Fig.8

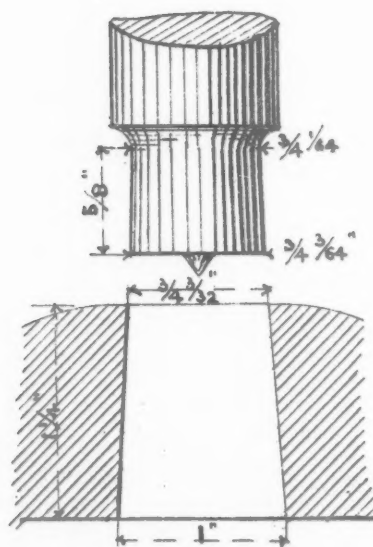
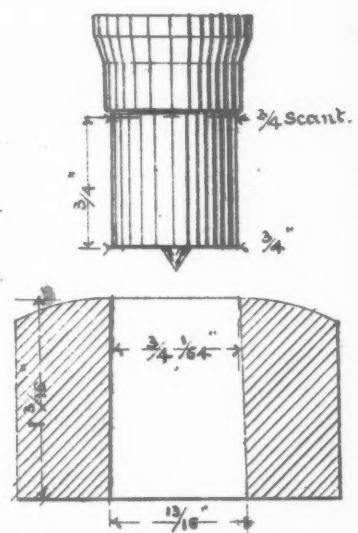


Fig.9





the mean of three experiments on joints with unrounded holes, gave the following results:

	Shearing resistance of rivet.
Rounded holes.....	21,517 tons per sq. in.
Unrounded holes; punched.....	20,953 " "
drilled.....	19,228 " "

Hence the joint with rounded holes was, as regards resistance of rivet, 12 per cent. stronger than the joint with drilled holes, but only 2½ per cent. stronger than the joint with punched holes.

"Regarding the apparent superiority of hand-riveting as compared with machine-riveting, the author observed that this was due to the fact that in hand-riveted joints the rivet was slightly hardened by being hammered after it was cold. In small experimental joints hand-riveting had, therefore, a slight advantage in strength, but the defects of hand-riveting were not likely to be exhibited in experiments on a small scale. The experiments appeared conclusive as to the inferiority of joints with drilled holes, and Sir William Fairbairn reiterated his conviction that the force used in punching plates was a valuable practical test of their quality, and tended to prevent the use of inferior iron."

It is not apparent from these experiments upon what ground the distinguished writer based his conclusion that joints with drilled holes are weaker than those with punched holes. The reason alleged for the reverse opinion is, that in punching the plates are strained so much as to be weakened. Curiously enough the above experiments give no indication of the relative strength of drilled and punched plates. They simply show that in each case, excepting the last, the plates were stronger than the rivets. If the rivets had been made a little larger in diameter, so that their strength would have been sufficient to tear apart the plates, it is possible that the specimens with drilled holes would have shown much greater strength than those which were punched. If a rivet in a drilled hole is broken with a less strain than in a punched one, it is no indication of the strength of the material around the hole, but only of the resistance of that which is in it. We think, therefore, that the experiments of Sir William Fairbairn shed no light at all on the vexed question whether punching impairs the strength of plates as compared with drilling.

What is also very remarkable is, that the experiments, instead of proving what the writer deduces—that rivets in punched holes will resist a greater strain than those in drilled holes—seems to prove the reverse. It is quite true that with the sharp edges which are left around a drilled hole, the above and other experiments seem to show that a rivet will be sheared with a less strain than in punched holes. This, however, is only an argument in favor of rounding the edges, and not in favor of punching. The first of the above experiments is the only one made with a single shear, punched hole and machine riveting, and the resistance of the rivet per square inch of section was 19,528 tons. If we compare this with the fifth experiment, we will see that a machine rivet in a rounded drilled hole is 20,254 tons per square inch, or 6½ per cent. stronger than that in the punched hole. If we compare the sixth experiment, which gives the maximum strength indicated by the experiments of a single sheared hand rivet in a punched hole, with the eighth, we see that the resistance of the first is 21,197 tons per square inch of section, whereas the hand rivet in a rounded drilled hole in the latter experiment broke at a strain of 21,276 tons. The experiments in which the rivets were subjected to a double shear show with equal conclusiveness that those in drilled plates, if the edges of the holes are rounded, are not inferior in strength to those in punched holes. The ninth is the only experiment with punched holes and double shear. The resistance of the rivet was 44,270 tons per square inch of section, whereas in the eleventh experiment the rivet in a drilled hole with rounded edges broke at 46,047 tons, and in the twelfth it resisted 50,121 tons without breaking. This shows conclusively, we think, that rivets in drilled holes with rounded edges instead of having less have greater strength than those in punched holes. It is quite true that some of the experiments show that a rivet in a punched hole has greater strength than one in a drilled hole with the edges left sharp, and that some of the hand rivets in punched holes showed a greater resistance than machine rivets in drilled holes; but the latter is not a fair comparison of the merits of punching and drilling, but rather of the methods of setting rivets. As we said before, the superior strength of rivets in rounded drilled holes is an argument in favor of rounding the edges of such holes, and not in favor of punching them.

We make this criticism of these experiments, not because we think they are at all conclusive one way or the other, but because we think they do not sustain the inferences drawn therefrom, but rather indicate exactly opposite conclusions from those stated by Sir William Fairbairn.

From the record before us of the experiments which he refers to, we are unable to tell how many rivets were subjected to strain in the specimens tested. This is of considerable importance, because one of the objections urged against punching the holes, especially for hand riveting, is that it is impossible to make those in one plate conform accurately to those in another, in which case, as is well known, the rivets will not fill the holes perfectly, and therefore the strain to which they are sub-

jected will not be distributed equally, but will be borne at first alone by those which have a "bearing" in the holes. These are therefore liable to be sheared off or to fracture the plate before the others are subjected to any strain. In this way the joint is liable to fracture in detail. In a seam made with drilled holes, especially if the two plates are drilled at the same time, the holes will conform exactly, and consequently the holes will conform accurately to each other. If now in making experiments the specimens tested have only a very few rivets, the strain to which they are subjected will necessarily be very equally distributed, and this source of weakness which we have pointed out in seams with punched holes will not be so apparent in the results as it would be if larger specimens were tested. It is said, we know, that in machine-riveting the holes, even if they do not match accurately, will nevertheless be filled by the rivet, owing to the greater pressure with which it is pressed in. The latter we know to be the case from actual tests which we have ourselves made. It presents, however, the question of the effect upon the strength of the plate of this increased pressure, which is now one of the undetermined problems in boiler construction.

There can be no doubt that the effect of punching and drilling depends very much upon the methods by which they are done. In order to get some information regarding the practice of American engineers, we applied to a number of leading firms for the proportions which they used for boiler-plate punches for ½-inch plates and ¾-inch rivets. Among the rest we received a reply from Mr. Coleman Sellers, of Philadelphia, who makes so many valuable suggestions that we give nearly the whole of his letter.

"Having read with much interest the papers on the relative advantage of drills and punches for perforating boiler sheets for the rivets, I would call your attention to the fact that it is quite possible to drill iron with a dull, badly-made drill; that when metal sheets are so perforated the drill, being forced through with considerable power, rubs or burnishes some of the metal which should be removed sideways into the sheets. This can be readily seen when one attempts to drill through a narrow strip of metal plate but little wider than the hole being drilled, as when one drills a ½-in. hole through a strip of metal ½-in. wide. With a sharp drill the hole can be made without stretching the strip sideways; but with a dull drill the plate will be bulged out on both sides, if not broken by the strain, showing that some of the metal has been forced sideways. It seems to me quite possible to injure plates by using dull drills, and in multiple drilling machines there is a liability of drills being used long after the cutting edge has become worn. In punching iron cold, there seems to me to be certain principles involved which may be clearly understood after a careful consideration of the nature of the phenomena. Workers in hot iron use a punch without a corresponding die, i. e., laying the hot iron on the anvil they drive in the punch from one side, then, turning the heated iron over, drive it in on the other side, making the two holes meet, and thus but a small button of metal is punched out of a very deep hole, showing that much the largest part of the metal has flowed sideways, expanding the mass of the iron being punched. It is possible to force a punch into a sheet of lead which rests on a flat surface and cause all the metal to flow sideways into the adjacent mass, producing a hole without loss of weight in the mass being punched. What is required in punching boiler sheets, and in drilling them, is to remove the metal where required without straining or weakening the sheet. It seems to me probable that if any method for perforating sheets of metal close to the edge of the sheet results in bursting out the side of the hole next to the edge, such method must be detrimental to the strength of the sheet, even when the hole is so far removed from the edge as not to show the defect. Yet this is not yet proven, inasmuch as iron can be condensed without decrease of strength, but rather with an increase of strength. In punching metal when the hole to be produced must be of uniform diameter throughout its length, the punch and die must of necessity be of the same diameter. In this case the punch in the first place not only condenses the metal below it, but presses some of it sideways until it has overcome the cohesion of the metal and cut out the remaining metal. It is probable that the punchings from straight holes weigh less than the cubical contents of the hole would warrant. If the hole in the die be made very much larger than the punch, the sheet would be drawn into the hole and cupped by the operation (as shown by fig. 1 of the full page lithograph). In this case the metal is strained toward the hole, not forced away from it. If the die hole be smaller than the punch, there will doubtless be a burring of the metal (as shown in fig. 2). Between these extremes there should be some means which will be the most desirable in practice. Fortunately for boiler-riveting purposes, a taper hole answers the purpose quite as well as a straight hole, and if the sheets are properly placed, say with the largest diameter of the two holes out, there may be a decided advantage in taper holes. The power required to remove the metal, either in drilling or punching, gives a fair test of the relative advantage of certain conditions of the tools or the material being perforated. Thus the power required to feed a sharp drill through a plate of metal is less than that required to feed a dull drill; and the power required to punch with some proportion of point and die is greater than with another. Thus the power required to punch a straight hole is very much greater than to punch a taper hole with a

punch a little smaller than the die-hole. So that it has come to good practice, where the case will permit a taper hole, to make the hole in the die larger than the punch, in proportion to the thickness of the plate to be punched; and it will be found stated in reliable works on engineering that when

d = diameter of punch in 1-16 of an inch;

D = " " die " " "

t = thickness of plate " " "

then $D = d + 2t$

Thus, if a three-quarter rivet requires a 13-16 hole to be punched through a ½ inch (8-16) plate, then diameter of die-hole will be $13 + (.2 \times 8) = 14.6$ sixteenths in diameter, i. e., say 29-32 in diameter. The hole punched will be 13-16 at one end and 29-32 at the other, and the metal button punched out will be shaped as shown in fig. 3. With dies made in this manner the punch need not be much reduced in diameter for clearance above the end.

The thickness of the die is usually dependent upon the character of the machine used. For convenience of holding them, they are seldom less than 1½ in. deep if fitted into a round hole in die holder. In a well-made punching machine the punch need not enter the die. The rupture of the metal button occurs when the punch is about ¾ through the plate, and as soon as the punch is level with the die face the punching should drop through the taper hole in the die. I have taken the liberty of thus enlarging on the subject to call attention to the fact that it is advisable in comparative tests of the strength of drilled or punched seams that the exact condition of the drilling or punching processes used should be noted, else the experiments may prove unreliable."

As Mr. Sellers very justly says, in making any experiments to determine the effects of punching and drilling plates, the exact condition of the two operations should be noted, and we will add the quality of the material perforated should also be known.

Our object in writing on this subject again is not to supply information regarding it, but to call attention to the lack of knowledge which exists, and the purely empirical nature of existing practice. This is shown in the wide differences which prevail in the proportions and forms of punches used. Fig. 4 shows that recommended by Messrs. Wm. B. Bement & Son; fig. 5, that used by the Baldwin Locomotive Works; fig. 6, that by the New York Steam Engine Company; fig. 7, that by the Rogers Locomotive Works; fig. 8, that by the Hinkley Locomotive Works, and fig. 9 that adopted by Mr. J. P. Richards, of Providence, who is a manufacturer of these tools. It will be seen that the difference in the diameter of punch and die varies all the way from 1-100 to 3-32 of an inch. It seems exceedingly probable that the relative proportion of the punch to the die exercises a very important influence on the effect produced on the plate punched. As to precisely what that effect is we have at present no accurate knowledge. With the vast increase in the number of steam boilers and iron vessels in use, the subject would seem to have sufficient importance to lead some person or association to make a comprehensive series of experiments which would forever set the matter at rest. It would, we think, be a very proper direction for the expenditure of a portion of the money appropriated by Congress for the experiments on steam boilers. What is needed is, to know experimentally the effect of differently proportioned punches and dies upon different qualities and kinds of boiler plate; the effect of different kinds of drilling on the strength of such plates; the relative strength of seams riveted by hand and by machine; and the relative strength of seams with the rivets disposed in different relations and proportions to each other.

The Early Grain Movement.

Chicago grain receipts have recently been really enormous, even for Chicago. On the 2d inst. the aggregate receipts of wheat, corn, oats, rye and barley were 825,000 bushels, 360,000 being wheat and 347,000 corn. These filled about 1,800 cars, besides about 500 car loads received by canal. These extraordinary receipts, at a rate which would give Chicago its ordinary yearly receipts in the space of three months, are not only overwhelming the western railroads, but taxing the lake marine to the limits of its capacity. A few weeks ago shipments of corn to Buffalo were made at four cents a bushel; on the day of these receipts 13 cents was the price, it having advanced two cents that day, and it has not been lower since. It is hardly possible that it should be otherwise, for during the eight days ending with the 2d the stock in Chicago—excess of receipts over shipments—increased 2,200,000 bushels. Even at these very high prices the shipments amounted to but 200,000 bushels on that day, and at this rate it is evident that the elevators will soon be blocked and receipts be limited by the simple physical impossibility of disposing of them. This is the time when railroad companies are condemned for failing to provide sufficient rolling stock, the complainants failing to consider that if enough were provided for such a week, a large part of it must be idle (and the interest on it be paid for by shippers) the other fifty-one weeks.

The wheat crop is large and its price remunerative if not entirely satisfactory, and corn, in view of the prospect of a light crop this fall, is higher than for a long time previous, and the farmers are more than usually in want of money, and altogether are inclined to turn their grain into currency as soon as may be.

With lake freights at these high rates, there was sure to be

a great deal of grain offered to the railroads to the East, as has been the case. The regular current rate on the 2d amounted to 27 cents per bushel for wheat and 25½ cents for corn from Chicago to New York. On that date the lake rate to Buffalo, added to the canal rate to New York, equaled 24½ cents, and the elevator charge and the delay more than make up the difference. Thus with the lake rates maintained, all the railroads leading eastward were likely to have several times as much as they could carry. The high lake rates, it will be remembered, are especially favorable to the east-and-west lines crossing Illinois south of Chicago. When lake rates are low, they can get grain only by carrying it at prices which leave little profit; when they are high they have an advantage over the lines extending southerly from Chicago and frequently make great inroads on their traffic. Low lake rates are to no one (except to the farmers collectively) so important as to the Chicago railroads, though high rates are frequently coincident (as now) with the heaviest traffic on these roads. But then the high rates are caused directly by the exceptionally heavy traffic, and there can be no doubt that the traffic would be on the average greater if the lake rates were always low. It is worth noticing that at a time when the demand has enormously increased the rates by the routes on which competition is perfect, it did not for weeks change, any more than to make them steadier, the charges of the "monopolist" railroads. Until after lake vessels were receiving three times the rate they accepted a few weeks ago, and the ocean vessels had doubled or more than doubled their charges, the railroads received no more than they did, though competing with the former means of transportation. This could not last forever, of course. Should the movement continue so rapid—that is, should the West insist on marketing the year's crop in one fourth of the usual time—the extraordinary demand could not fail to have its usual effect on prices. The high lake rates would have turned the whole traffic to the railroads, if they could have taken it, at the old rates, and where there are four competitors for every car it is pretty sure at last to go to the highest bidder, otherwise such bidder would have good ground for complaint of "unjust discrimination." So early this month rates were advanced five cents, per hundred from Chicago to New York on grain and other low-class goods, which is equivalent to three cents a bushel on wheat and a trifle less on corn. As the lake vessels have increased their rates nine cents to Buffalo, and there have been advances also on canal rates, the railroads seem to have been moderate. The present rate is the usual fall rate, which is fixed usually as early as the demand for cars will justify it, which this year was earlier than usual.

The Midland's Line to Buffalo.

Agents of this company in advertising its bonds have made some statements concerning the length of the proposed line to Buffalo, which would indicate that such line is much shorter than any now in operation. A comparison is made with the length of the New York Central & Hudson River line and the Erie line, which makes the former 70 and the latter 38 miles longer than the Midland's line, which is given as 385 miles long. The first error noticeable here is the length of the Central's line, which is not 455 miles but only 440 miles from New York to Buffalo. A more serious mistake, however, is in the length of the Midland itself. The statement made in the advertisement that trains are running 85 miles on the "Western Extension," and that 120 miles more will complete it to Buffalo. This would give 205 miles from Norwich to Buffalo. Norwich is 233 miles from New York by the road now marked, and with the Montclair Railway completed as proposed (and it is by this route that the distance of 385 miles is advertised) it will be but 24 miles shorter, or 209 miles, so that we have 414 instead of 385 miles as the distance to Buffalo. But even this is too short, for an extension of 120 miles will not complete the Western extension to Buffalo. The present terminus of that line is Scipio Centre, which is about 10 miles southeastward from Auburn, to which this branch is (or was) to be extended. Now Auburn is by the direct line of the New York Central, which is nearly straight, 134 miles from Buffalo, and 115 miles in an air line. So to get the probable length of the Midland's Buffalo line, with the Montclair extended, we will have:

New York to Norwich.....	209 miles.
Norwich to Scipio Centre.....	85 "
Scipio Centre to Auburn.....	10 "
Auburn to Buffalo.....	134 "
Total.....	438 miles.

This is fifty-three miles longer than the distance advertised for the Midland, only two miles shorter than the Central's line, and 16 miles longer than the Erie's line, which in the character of its grades it more nearly resembles.

Of course it is not impossible for a railroad from New York to Buffalo of this or a greater length to do a profitable through business; but when the shortness of a route is held out as an attraction to investors, the figures should not be so wide of the truth—and 53 miles from the truth seems to us almost out of sight of it.

It is probable enough that the first intention was to make a line no more than 385 miles long. But the New York & Oswego Midland, from Oswego to the New Jersey line, turns out to be ten miles longer than was reported a year ago, and we suspect that the Western Extension was originally intended to extend pretty directly from Norwich northeastward to Auburn, instead of which it has been made to take a more devious path than any other line out of a mountainous country that we know of. It starts well by going nearly due northwest about 25 miles to De Ruyter, then turns at a right angle and runs southwest 30 miles to Cortland and Freeville, and then a little west of north 20 miles to the present terminus at Scipio Centre, whence to reach Auburn it must extend east of north.

What these meanderings were made for, we do not know;

but they are such that if a direct line were to be made from Norwich to Auburn it would use only the 25 miles between Norwich and De Ruyter of the Western Extension as now built. Such a direct line from Norwich to Auburn would be about 65 miles long, instead of 96 by the line now nearly completed, and with one as direct as practicable the Midland might have a line to Buffalo only about 408 miles long. To make it, however, there must be an extension about 30 miles long of the Montclair, through difficult country, a second line constructed from De Ruyter to Auburn, at least 40 miles, besides the line from Auburn to Buffalo, which must be the same in any case. And if the Montclair should not be extended and no new line made from De Ruyter to Auburn (this latter has not even been hinted at, so far as we know) then the Midland's Buffalo line will be 462 miles long.

Record of New Railroad Construction.

This number of the RAILROAD GAZETTE has information of the laying of track on new railroads as follows:

New Brunswick.—Track laid from Fredericton, N. B., westward up the St. John River 43 miles. **Portsmouth & Dover.**—Track laid from Portsmouth, N. H., northwestward 6 miles to the bridge over the Piscataqua. **Springfield & Northwestern.**—Extended from Petersburg, Ill., southeast 11 miles to a point within eight miles of Springfield. **Quincy, Alton & St. Louis.**—The Fall Creek Branch has been completed from the junction with the main line at Fall Creek southwest 5 miles to the east end of the Hannibal Bridge. **Memphis, Carthage & Northwestern.**—Extended from Minersville, Mo., west 10 miles to State Line on the east border of Kansas. **Geneva & Ithaca.**—Completed by the laying of 15 miles of track.

This is a total of 90 miles of new railroad. Of this length 47 miles is in the United States, making the total constructed in 1873 2,455½ miles.

THE COST OF TELEGRAPHING ON the Western Union Lines has been very well put in a letter to the New York Times from Mr. William Orton, the President of the company, in reply to an editorial in that paper which stated that the company received an average of 72 cents per message in 1872, and that if it had reduced the charges to an amount only large enough to pay the expenses and 6½ per cent. on the actual cost of the property, they would have averaged but 24 cents per message—which, of course, was equivalent to saying that two-thirds of the company's receipts were net profit over and above 6½ per cent. on the investment. Mr. Orton answers that, in the first place, the average receipts per message in 1872 were 62 and not 72 cents; that the average expense per message for operators' and messengers' salaries only in 1872 were 24½ cents, and the cost of maintenance of lines 7½ cents, making the cost per message, exclusive of the interest on the investment, 32 cents per message. It appears to be a fact that the cost per message is not largely reduced by a very large increase in the number of messages, as there must be an investment of new capital for almost every accession of new business, and the labor employed, which is the great element in the cost of telegraphing, is almost exactly in proportion to the work done. Mr. Orton gives the cost of per message of operators' and messengers' salaries for five years as follows: 1869, 28 cents; 1870, 26½ cents; 1871, 25 cents; 1872, 24½ cents; 1873 (first half), 23½ cents. For the same period the cost of maintenance of lines was: 1869, 8½ cents; 1870, 8½ cents; 1871, 7½ cents; 1872, 7½ cents; 1873, 9½ cents. This gives a cost for these two expenses of 36½, 35½, 32½, 32 and 32½ cents for the respective years, the greatest variation being 4½ cents, though within this period the number of messages has very greatly increased.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

—William H. Cate, of Helena, Ark., has been chosen President; Col. Howes, of Forest City, Ark., Vice-President, and John C. Knight, Secretary of the Helena & Iron Mountain Railroad Company.

—The Troy & Lansingburg (steam) Railroad Company was recently organized by the election of the following board of directors: A. B. Elliott, Charles H. Fisher, Joseph Fox, Eugene Hyatt, David Judson, D. H. Humphrey, Jefferson Gardner and D. H. Flack, Lansingburg, N. Y.; Lucius Wright, J. F. Calder, H. O'R. Tucker and David Cowee, Troy, N. Y.; A. Pine, of Pittstown, N. Y. At a subsequent meeting of the directors, the following officers were elected: Dr. A. B. Elliott, President; Charles H. Fisher, Vice-President; Eugene Hyatt, Secretary; J. F. Calder, Treasurer.

—At a meeting of the directors of the Lee & New Haven Railroad Company, September 6, the old officers were re-elected as follows: President, Orlin Northway; Secretary, T. M. Judd; Treasurer, P. C. Baird. Dr. C. C. Holcombe was appointed a committee on the State loan.

—Mr. John Adams, of Fitchburg, Mass., has been appointed Assistant Superintendent of the Fitchburg Railroad. He has been Purchasing Agent of the road for several years.

—A general order from the President of the Great Western Railway of Canada announces the following organization of the general officers of that corporation, to take effect on September 5: Joseph Price, General Manager; W. K. Muir, General Superintendent; Samuel Barker, Solicitor; Joseph Metcalf, Treasurer; John Kennedy, Chief Engineer; W. A. Robinson, Mechanical Superintendent; John Crampton, General Freight Agent; Robert Batty, General Purchasing Agent; W. McMillin, Fuel Agent. The new General Manager, Mr. Price, has heretofore been Treasurer, and is succeeded in the latter office by Mr. Metcalf, late Auditor. In the other offices there is no change.

—Mr. James Donnelly, late Train Master on the Northern Central, has been appointed Train Master on the Baltimore & Potomac. Mr. Joseph K. Sharp, late Superintendent of the Susquehanna and Shamokin Divisions of the Northern Central, has resigned to accept a position on the Baltimore & Potomac.

—At the annual meeting of the Connecticut & Passumpsic Rivers Railroad Company in Newport, Vt., September 2, the following directors were elected: Elijah Cleveland, Coventry, Vt.; Henry Chase, S. S. Thompson, Lyndon, Vt.; T. P. Red-

field, Montpelier, Vt.; Horace Fairbanks, St. Johnsbury, Vt.; Albert Knight, Stanstead, Quebec; Daniel R. Sortwell, Cambridge, Mass.; Emmons Raymond, Josiah Stickney, B. P. Cheney, Gardiner C. Brown, F. M. Weld, Amos Barnes, Boston. The only change is the election of Mr. D. R. Sortwell, who takes the place of Benjamin Pomroy.

—Mr. P. P. Wright, late Superintendent of the Buffalo Division of the Lake Shore & Michigan Southern, has been appointed Superintendent of Transportation of the Erie Railway.

—The board of directors of the New Orleans, Mobile & Texas Railroad Company, as re-organized, is as follows: T. H. Hunt, S. H. Kennedy, L. F. Genereux, New Orleans, La.; L. H. Meyer, George Bliss, Joseph Seligman, John T. Terry, William M. White, New York; Oliver Ames, Jr., North Easton, Mass.

—At the annual election of the Memphis & Charleston Railroad Company, held at Memphis, Tenn., and Huntsville, Ala., September 10, the following directors were chosen for the ensuing year: R. C. Brinkley, P. C. Bethel, H. E. Jackson, J. C. Neely, Memphis, Tenn.; W. P. Beirne, J. J. Donagan, W. W. Garth, Huntsville, Ala.; Albert H. Jones, Florence, Ala.; John D. Kather, Tusculuma, Ala. Messrs. Bethel, Jackson, Neely and Garth are new directors, taking the places of W. B. Waldron, J. C. Bradley, P. Muller and M. J. Wicks.

—At the annual meeting of the Pequest & Walkill Railroad Company at Belvidere, N. J., September 2, the following directors were chosen: Seldon T. Scranton, Grinnel Burt, Joshua Hunt, James N. Smith, John W. Wyckoff, Homer Ramsdell, James B. Titman, Charles Scranton and Jehiel G. Shipman.

—The following officers for the ensuing year were chosen at the annual meeting of the Des Moines & Minnesota (narrow gauge) Railway Company at Des Moines, Ia., September 9: President, Samuel Merrill; Vice-President, J. B. Stewart; Treasurer, J. Callahan; Secretary, F. M. Hubbell.

—Mr. B. W. Spencer, late Cashier and Acting Assistant Treasurer, has been appointed Assistant Treasurer of the Erie Railway Company, in place of J. D. White, resigned. Mr. H. H. Thompson, late Acting Cashier, has been appointed Cashier.

—Mr. Samuel Schoch has been appointed General Manager of the Marquette, Houghton & Ontonagon Railroad, and not General Superintendent, as was stated recently.

—The Yonghiogheny River Navigation Company was organized at McKeesport, Pa., September 3, by the election of the following officers: President, Thomas Moore; Vice-President, B. S. Heath; directors, N. G. Bigley, E. C. Sater, Wm. Douglass, B. B. Coursin, Joseph Finch.

—Mr. David Attick, formerly of the Shamokin Division, has been appointed Train Master of the Susquehanna Division of the Northern Central Railway, in place of James Donnelly, resigned.

—At the annual meeting of the Baltimore & Potomac Railroad Company in Baltimore, September 3, the following directors were chosen: Oden Bowie, Annapolis, Md.; Samuel Cox, Port Tobacco, Md.; Eli J. Heukle, Brooklyn, Md.; B. F. Newcomer, William T. Walters, George Small, Baltimore; J. N. Du Barry, Harrisburg, Pa.; George B. Roberts, Philadelphia. The board subsequently re-elected Hon. Oden Bowie, President; J. N. Du Barry, Vice-President and General Manager; S. Little, Secretary and Auditor and J. S. Loib, Treasurer.

At the annual meeting of the Massawippi Valley Railroad Company at Stanstead, Quebec, recently, Robert N. Hall, of Sherbrooke, and Stephen Foster, of Stanstead, were elected directors to fill the vacancies caused by the retirement of Sir A. T. Galt and Col. Pomroy.

—The earnings of the St. Louis & Southeastern Railway for the first week in September were: 1873, St. Louis Division, \$21,189.76; Nashville Division, \$9,873.94; total, \$31,063.70; 1872, total, \$22,083.24; increase, \$8,980.46, or 40½ per cent.

—The earnings of the Marietta & Cincinnati Railroad for the first week in September were: 1873, \$42,023; 1872, \$39,145; increase, \$2,878, or 7½ per cent.

—Mr. John H. Hull, who has just resigned his position as Superintendent of the West Wisconsin Railway, was presented with a handsome silver set by the employees of the road at Hudson, Wis., September 10. Mr. Hull has gone to Chicago, where he will remain for a time.

—Dr. Henry O. Ely, of Binghamton, N. Y., has been appointed Assistant Surgeon of the Erie Railway for the Susquehanna Division. Dr. Joan W. Gray, of Avon, N. Y., has been appointed Assistant Surgeon for the Rochester Division.

PERSONAL.

—Mr. H. L. Brown, for ten years past Master Mechanic of the Eastern Division of the Erie Railway, has resigned his position. Messrs. Henderson and Onderdonk, train dispatchers at Jersey City, have also resigned.

—Mr. Abner Forbes, for eleven years Chief Clerk of the Vermont Central Railroad, and at one time Paymaster also, died at his residence in St. Albans, Vt., September 7. Mr. Forbes had been in the service of the company for 20 years, having been station agent at Windsor for nine years previous to his appointment as Chief Clerk.

—Mr. Robert B. Small, who has resigned his position as Master Mechanic at Brainerd, Minn., on the Northern Pacific, to accept an appointment as Master Mechanic at Fort Wayne, Ind., on the Toledo, Wabash & Western, was, before leaving Brainerd, presented with a gold watch and diamond pin by the employees lately under his charge.

—Col. George H. Peirce, of Dover, N. H., died at that place September 13. Col. Peirce had been an extensive railroad contractor, having built, among other lines, a large part of the European & North American road, the Little Rock & Fort Smith, the Vineland road and many others. Col. Peirce was 44 years of age and had been sick for some time. He was a brother of Andrew Peirce, Jr., Vice-President of the Atlantic & Pacific Company.

TRAFFIC AND EARNINGS.

—The earnings of the St. Louis & Southeastern Railway for the month of August were: 1873, St. Louis Division, \$67,356.63; Nashville Division, \$43,803.98; total, \$111,160.63; 1872, total, \$92,567.64; increase, \$20,592.99, or 22½ per cent.

—The earnings and expenses of the Central Railroad of New Jersey for the eight months ending August 31 were as follows:

	1873.	1872.	Increase.	P. Ct.
Earnings.....	\$5,625,895.18	\$4,753,286.21	\$880,608.97	18½
Expenses.....	2,855,900.37	2,764,626.69	91,273.68	2½
Net earnings.....	\$2,779,994.81	\$1,978,659.52	\$809,335.29	41½

The gross earnings per mile were: 1873, \$19,367; 1872, \$16,341; increase, \$3,026, or 18½ per cent. The net earnings per mile were, 1873, \$9,553; 1872, \$6,772; increase, \$2,781, or 41½ per cent. The percentage of expenses to gross earnings in 1873 was 50.67 per cent.; in 1872, 58.66 per cent.

—The earnings of the Milwaukee & St. Paul Railway, for the first week in September, were: 1873, \$254,330; 1872, \$159,223; increase, \$95,107, or 59½ per cent.

—The earnings of the Baltimore & Ohio Railroad and branches, including the Ohio divisions, for the three months

ending August 31 were: 1873, \$4,113,483.17; 1872, \$3,689,955.23; increase, \$423,527.94, or 11½ per cent. The coal tonnage for the quarter was 550,378 tons, an increase of 96,180 tons, or 21½ per cent. over the same quarter in 1872.

The earnings of the Denver & Rio Grande Railway for the month of August (excluding, we believe, the Canon Branch) were: 1873, \$36,596; 1872, \$34,137; increase, \$2,459, or 7¼ per cent. The earnings for August, 1873, were at the rate of \$305 per mile.

The earnings of the Burlington & Missouri River Railroad in Nebraska for the four months ending April 30, 1873, were \$140,623.29, or \$583.50 per mile. For the month of June the earnings were \$45,952.48, or \$191 per mile; and for the month of July, \$47,832.28, or \$198 per mile.

The earnings of the Chicago & Northwestern Railway for the first week in September were: 1873, \$347,959; 1872, \$295,599; increase, \$52,360, or 17½ per cent.

The earnings of the Toledo, Wabash & Western Railway for the first week in September were: 1873, \$146,529; 1872, \$119,644; increase, \$26,885, or 22½ per cent.

The earnings of the Great Western Railway of Canada for the week ending August 29 were: 1873, \$22,984; 1872, \$20,784; increase, \$2,200, or 10½ per cent.

The earnings of the Grand Trunk Railway of Canada for the week ending August 30 were: 1873, \$43,500; 1872, \$38,100; increase, \$5,400, or 14½ per cent.

The earnings of the Kansas Pacific Railway for the first week in September were: passengers, \$32,783.80; freight, \$38,890.06; mails, \$2,055.31; total, \$73,729.17. Of this amount, \$3,665.54 was for transportation of troops, mails and government freight.

OLD AND NEW ROADS.

Staten Island Central.

Ground was broken for this new road September 12. It is said that a considerable force is to be put at work on the grading at once and that the work is to be pushed forward. The road commences at Tottenville, on the southwest point of the island, and runs thence in a northeasterly direction 11 miles along the north shore through Rossville to Port Richmond, whence connection will be made with the New Jersey Central by ferry to Bergen Point, N. J.

New Brunswick.

This new road was opened for travel for 30 miles, from Fredericton, New Brunswick, westward up the valley of the St. John to Upper Riverview. The track is laid for 13 miles further, making 43 miles in all. Work is being pushed rapidly, and it is intended to have the road opened for business to Hartland, 70 miles from Fredericton, by December 1. The iron for the extension to Hartland is all purchased, Messrs. Miller & Smith of New York having the contract. The road, which opens an extensive lumbering country, will follow up the St. John Valley to Grand Falls, and run thence across to the St. Lawrence at Riviere du Loup.

New Orleans, Mobile & Texas.

A plan has been agreed upon for the reorganization of this company, the main features of which are as follows:

The old capital stock having been wiped out by the recent sale, the stock of the new company is fixed at \$3,125,000, in shares of \$100. Of this the first-mortgage bondholders are to receive \$3,625,000, being one dollar of stock for every two dollars of first-mortgage bonds and unpaid coupon. The second-mortgage bondholders are to receive \$2,000,000 of stock, to be distributed *pro rata*. The old bonds being thus disposed of, a new issue of first-mortgage bonds is to be made to the amount of \$4,500,000, or \$20,000 per mile, a portion of which is to be used to discharge the mortgage on the road held by the State of Louisiana, the remainder being sold to provide means for the completion and equipment of the road. There is also to be an issue of \$3,625,000 second-mortgage bonds, which are to be distributed among the holders of the old first-mortgage bonds in the same manner as the stock.

The balance of \$2,500,000 of the new stock is reserved for the State of Louisiana, under its subscription made by the act of 1871, and will be held subject to the orders of the State authorities. Provision is also made for an adjustment of Mr. Charles Morgan's claims.

A board of directors has been designated who will hold office until June 3, 1874, when the annual meeting will be held.

Grand Trunk.

The Chicago agent advertises that the change to the standard gauge between Stratford and Montreal will be made early in October, and that to avoid detention and accumulation of freight, shipments for points east of Stratford were discontinued on the 13th. Shipments, of course, continue on the Buffalo line, which is already of standard gauge.

Staten Island Bridge.

Mr. George E. Harding, C. E., is engaged in making surveys for the foundation for the bridge which the Staten Island Improvement Company purposes to construct from the Jersey shore at Constable's Point across the Kill von Kull to New Brighton, Staten Island.

Meetings.

The stockholders and bondholders of the Ohio & Mississippi Railway Company will meet for the election of four directors at the office, No. 217 West Fourth street, Cincinnati, October 9. Transfer books were closed on the 17th and will be reopened October 13.

The Grand Tower Mining, Manufacturing and Transportation Company will meet to choose directors at noon of October 7.

The annual meeting of the Cincinnati, Sandusky & Cleveland Railroad Company will be held at Sandusky, O., October 15.

The annual meeting of the Columbus, Springfield & Cincinnati Railroad Company will be held at Springfield, O., October 16.

A convention of the Railroad Conductors' National Insurance Association is to be held in Boston, Mass., October 8.

Dividends.

At meeting on the 9th inst., the directors of the Central Pacific Railroad Company declared a dividend of 3 per cent., payable September 20. Eastern shareholders (there must be very few of them) are paid at No. 9 Nassau street, New York, the company's Eastern office.

The Panama Railroad Company has declared the usual quarterly dividend of 3 per cent., payable October 1.

Northern Pacific.

At a meeting of the board of directors, September 10, a resolution was passed declaring that the company would locate and construct its main road to a point on Puget Sound on the southerly side of Commencement Bay, in township 21, range 3, east of the Wallamette meridian, and within the limits of the city of Tacoma, which point is declared to be the western terminus of the main line of the Northern Pacific Railroad.

Low Passenger Rates.

A sharp competition was commenced by the ticket agents of the Missouri Pacific, St. Louis, Kansas City & Northern, Hannibal & St. Joseph, and Kansas City, St. Joseph & Council Bluffs roads, at Leavenworth, Kan., September 11. The competition commenced by cutting rates to St. Louis and Indianapolis

on tickets for delegates to the Quaker Convention at the latter city, but shortly extended to Chicago rates also. Tickets were sold to St. Louis as low as \$3 and to Chicago at \$7 (the regular fare being \$18.40). The Chicago, Rock Island & Pacific refused to lower its rates. Large numbers of tickets were bought by speculators while the competition lasted.

New York & Washington.

With regard to the reports that the Pennsylvania Railroad Company had refused to carry the Baltimore & Ohio's through cars from Washington through to New York, the Baltimore *Sun* says:

"Whatever may be the rivalries of the two great companies, the Pennsylvania and the Baltimore & Ohio, it would hardly be supposed that the rights and interests of the public could be ignored in the matter of the transit between Washington and New York, as indicated by the above, and besides, as the Philadelphia, Wilmington & Baltimore road is the link for the common use of the two other roads in the through line, it is not likely to tolerate any such proscriptive action by the one against the other. Hence we are given the following assurances on the subject: The Pennsylvania road continues to sell tickets and check baggage at New York for Washington and all points south and west by the Baltimore & Ohio route; through passengers upon all night trains go in through cars by the Baltimore & Ohio or Baltimore & Potomac roads as they prefer. The Pennsylvania road does not run a through car upon the morning line from New York by the Baltimore & Ohio route, but passengers change cars at Wilmington; north-bound trains run through as heretofore, passengers selecting at Washington the Baltimore & Ohio or Baltimore & Potomac routes as they prefer."

Cairo & Vincennes.

Recently Gen. A. E. Burnside, President of this company, issued an order removing Gen. E. F. Winslow, General Manager, and John Lee, Superintendent of the road, and appointing Roswell Miller Superintendent. Messrs. Winslow and Lee refused to recognize the order, or the authority of Gen. Burnside to remove them. Mr. Miller, however, obtained a temporary injunction from Judge Baker, of the Circuit Court at Cairo, Ill., restraining Mr. Lee from interfering with the road, and at latest dates Miller remained in possession of the road. General Winslow's attorneys have applied to the court to have the injunction dissolved, and have also applied to the United States District Court for an injunction to restrain General Burnside from interfering with General Winslow or his employees.

Portsmouth & Dover.

The rails are laid from Portsmouth, N. H., northeast to the Piscataqua Bridge, a distance of about six miles. Piling is being driven for the wharves on Noble's Island at Portsmouth.

Geneva & Ithaca.

The last rail was laid at Romulusville, N. Y., September 13. The road is about 49 miles long, from Geneva, N. Y., southeast to Ithaca, between the Seneca and Cayuga lakes.

Rochester & State Line.

The grading and masonry are so far completed that track-laying can be begun at once at both ends of the line and carried through without interruption. The ties are being distributed along the line, and the bridge superstructures are to be put up at once. The road extends from Rochester, N. Y., southwest to Saamanca, the junction of the Erie and Atlantic & Great Western roads.

Atlantic & Pacific.

Judge Daniels, of the New York Supreme Court, has rendered his decision in the suit to continue the injunction restraining this company from paying the dividends on Missouri Pacific stock due under the lease.

After a careful review of all the preliminary facts, Judge Daniels decides that the provisions of the charter were broad enough to permit the Atlantic & Pacific Railroad Company to receive a lease of that part of the Pacific Railroad of Missouri extending from Franklin to St. Louis (37 miles), but the lease of that road from Franklin to Jefferson City and the lease of five other roads were unauthorized. There was nothing in the charter allowing it to take leases of the other railroads in order to induce the leasing to it of that part of the road between Franklin and St. Louis. If that could be done, with the same propriety it might, under similar exactions, have taken leases of every railroad in the West. These leases were, therefore, void for want of authority in the Atlantic & Pacific Railroad Company to receive them. And that would result in the cancellation of the lease from Franklin to St. Louis, because the rent to be paid for all consists of an entire amount incapable of apportionment. Nevertheless he refused to grant the injunction asked, saying:

"The rent which has accrued has all been paid, and before the next installment matures the plaintiff will have abundant opportunity to bring his action in proper form and before a tribunal having complete jurisdiction over all the parties to the controversy, when entire justice can be administered. For that reason no necessity exists for continuing the present injunction until such an action can be commenced. The motion to continue the injunction must be denied, with costs."

Southern Central.

It is reported that the Lehigh Valley Company will soon purchase this road, which extends from a junction with the Pennsylvania & New York road at the Pennsylvania State line north through Owego, N. Y., and Auburn to Fair Haven on Lake Ontario. It is 116 miles long.

New York & Long Branch.

The northern section of this road, the New Jersey Central's Long Branch line, is rapidly approaching completion and it is expected, will be opened to Perth Amboy about October 1. The bridge over the Raritan between Perth Amboy and South Amboy is rapidly approaching completion. It is about 3,000 feet long.

Michigan Lake Shore.

Some weeks since a suit for foreclosure of mortgage was commenced against this company at the instance of James B. Colgate, of New York, a holder of the company's bonds on which interest had not been paid. The bill was filed in the Allegan (Mich.) Circuit Court, and at the same time application was made for the appointment of a Receiver for the railroad, to manage it in trust for the protection of the interests of mortgage creditors. The hearing was had, and Thomas Messier, President of the company, was appointed Receiver; and the same night the road was formally turned over by the court to the direction and management of the Receiver. Some six or seven hours previous to the accomplishment of this proceeding, however, a Mr. Wade, of Cleveland, claiming to represent some \$100,000 of bonds of the company, filed a bill in the United States Court, before Judge Withey, commencing a foreclosure and asking for the appointment of a Receiver, and citation was issued for the company to appear and show cause, on the 6th of October next, why a receiver should not be appointed. Subsequently the Colgate party and Receiver Messier were cited to appear before Judge Stone at Grand Haven and show cause why the proceedings in the Allegan Circuit should not be stayed, the cause dismissed and the Receiver discharged, because of priority of a like proceeding pending in the United States Court for this district. The hearing at Grand Haven came off a week or two ago, and resulted in dismissing the motion, the judge holding that the court in

Ottawa County could not interfere with the proceedings in chancery in Allegan County.

The petition to dissolve, etc., was then renewed in the Circuit at Allegan, and hearing was had thereupon September 8, and the court reserved its decision, which has not yet been rendered. This is said to be a contest for the control of the road. The Colgate party, it is said, represent the Pennsylvania Company, which now controls it, through the Grand Rapids & Indiana; and the Cleveland party represents the Lake Shore & Michigan Southern.

The Michigan Lake Shore road is 56 miles long from Muskegon, Mich., south by east to Allegan, and it uses (and, we believe, partly owns) 11 miles of track built by the Mansfield, Coldwater & Lake Michigan Company, from Allegan eastward to Monticello on the Grand Rapids & Indiana.

Baltimore & Ohio.

At the regular monthly meeting of the directors in Baltimore, September 10, it was announced that \$1,000,000 of the new 6 per cent. sterling bonds, being the remainder of the \$2,000,000 authorized, had been negotiated in London by Baring Brothers & Co., at 96½.

The work on the third track east of Piedmont and on the second track between Piedmont and Grafton is progressing steadily. The new elevator at Locust Point (Baltimore) is approaching completion. Since March 1, 50 locomotives, 33 passenger and baggage cars, 1,291 freight cars and 300 coal hoppers have been added to the equipment.

Work on the Valley road in Virginia is progressing rapidly, and it is expected to be open to Staunton, on the Chesapeake & Ohio, in December.

The Chicago Extension is to be completed in November from the junction with the Lake Erie Division westward 62 miles to Deshler on the Dayton & Michigan road, which will give the company a connection to Toledo. The grading and masonry of the Indiana Division will probably be finished this year.

Milwaukee & St. Paul.

The business on this company's lines is now unusually large. The company has been obliged to hire a number of cars, beside an addition of 500 lately made to the equipment. The passenger business has also been very heavy this season.

Philadelphia & Reading.

The passenger rolling stock of this road is being fitted with the improved Westinghouse brake.

Shreveport & Southwestern.

This company has asked Shreveport, La., for a donation of \$300,000, and an election is to be held on the question.

Columbia & Port Deposit.

Work is now going on on this road between Columbia, Pa., and Washington. The masonry for the bridge over Strickler's Run is going up. There is some heavy work on this section of the line.

Rutland & Bethel.

There is some talk of building a railroad from Rutland, Vt., northeast to Bethel, on the Vermont Central. The road would be about 25 miles long and would form a direct line from Rutland to Montpelier.

Des Moines & Minnesota.

This company has notified the city authorities of Des Moines, Ia., that it has taken possession of East Front street in that city, on which to enter the city and make a connection with the Rock Island and Des Moines Valley roads. The City Council had refused to provide any way for them to enter the city, hence this action.

The road, which is to be of 3-foot gauge, is now under contract from Des Moines north to Ames on the Chicago & Northwestern.

Chesapeake & Ohio Canal.

The line proposed for the western extension of this canal runs from Cumberland, Md., up Mill Creek Valley to the Great Savage Mountain, then through that mountain by a tunnel nearly four miles long and down the Youghiogheny and Monongahela Valleys to Pittsburgh. The length of this line is 178 miles, and there would be a rise of 900 feet from Cumberland to the summit, with a fall of 800 feet from the summit to Pittsburgh, making 1,700 feet of lockage required.

The present length of the canal is 182 miles, from Georgetown, D. C., to Cumberland, and the rise in that distance is 578 feet, which is overcome by 75 locks.

Rice Point.

A company by the name of the Rice Point Railway Company has been organized in Duluth, Minn. The road is to extend from the Lake Superior & Mississippi road down Rice Point to the Wisconsin State line at the St. Louis River. The capital stock is \$50,000 and the incorporators are B. S. Russell, C. W. Mead, R. M. Newport, J. B. Power and Geo. Gray.

Superior & St. Croix.

This company has made application for the condemnation of lands in Superior City, Wis., for a site for station buildings and yards.

Great Western, of Canada.

The President and several of the directors of this company, are now making the regular annual inspection of the road.

Norfolk & Great Western.

The Richmond (Va.) *Enquirer*, of recent date, says: "It is generally understood that negotiations, likely to have a favorable result, are pending between the Norfolk & Great Western Railroad Company and English capitalists, looking to a sale of the company's bonds to a sufficient amount to insure the construction of the road. An engineer, sent over by the capitalists, will sail from Liverpool on the 20th inst., and his duty will be to make a report of the prospects of the road to the gentlemen whom he represents."

Sunbury & Lewistown.

It is probable that this road will soon be sold under foreclosure of mortgage. The road extends from Lewistown, Pa., northwest to Seisengrove on the Northern Central, 45 miles, and is now operated by the Pennsylvania Railroad Company. It is rumored that the Philadelphia & Reading Company will make an effort to secure control of the road, with which, however, it has no direct connection.

Green Bay & Lake Pepin.

The City Council of Winona, Minn., has passed the ordinance giving this company authority to lay its tracks through Front street in that city.

The proposition to build a branch from Plover, Wis., to Stevens Point (about three miles) has fallen through.

At a special meeting held at Green Bay, Wis., September 8, it was voted to change the name of the company to the Green Bay & Minnesota Railway Company, by which title it will hereafter be known.

New York & Washington.

This company purposes to construct a new line between Camden and Amboy, with a connection from Philadelphia to Baltimore, and with the use of the track of the Long Branch line of the Central Railroad of New Jersey from Amboy to Jersey City, form a new route between New York and Baltimore. Mr. George E. Harding, its Engineer, has completed a preliminary survey across New Jersey,

beginning at the Central Railroad bridge near South Amboy, keeping north of the Camden & Amboy road as far as Hightstown and thence south of it to Camden, making a route 65 miles long through a fine country.

Indianapolis Belt.

The directors have awarded the contract for the bridges over White River and Fall Creek to the Louisville Bridge Company. Contracts have also been made for 25,000 ties, 2,500 tons of steel rails and six locomotives; work on the grading has been commenced. The road is to extend around the city of Indianapolis, connecting all the roads entering the city.

Northeast Pennsylvania.

Work is progressing rapidly on the extension of this road from its present terminus at Hatboro to the Bristol Road near Hartsville. The extension will be two and a half miles long.

Memphis, Carthage & Northwestern.

Work is being pushed forward on the extension of this road westward from its present terminus at the Missouri State line. Trains are now running to State Line, 10 miles beyond Minersville and 46 miles from Pierce City. A branch from Minersville to the Joplin lead mines is proposed, and surveys for it will soon be made.

Cincinnati & Great Northern.

At a meeting held in Hillsdale, Mich., August 27, the Michigan Company of this name voted to ratify the agreement of consolidation with the Ohio company of the same name. The Ohio company had previously voted in favor of the consolidation. The consolidation is now complete and officers for the new company have been chosen. The name of the company remains unchanged.

Sioux City & St. Paul.

Extensive preparations are being made to prevent any future trouble from a cow blockades on this road. The light cuts are being leveled as far as possible and a triple line of fences put up at all the deep cuts.

Chicago & Northern Pacific Air Line.

Work on the grading is going on between Jefferson, Wis., and the Illinois State line. From the State line to Chicago the line is located and part of the right of way secured.

Galena & Southern Wisconsin.

This narrow-gauge road, now nearly completed from Galena, Ill., northwest to Platteville, Wis., was originally intended to run from Platteville north to the Wisconsin River at Muscoda. It is now proposed to turn the road eastward from Platteville and run east by north through Iowa and Dane counties to Madison. Surveys are being made for the new line.

Marquette, Houghton & Ontonagon.

A second track is to be laid on the eastern end of the line from Marquette, Mich., to accommodate the large traffic in iron ore.

Marquette, Sault Ste. Marie & Mackinac.

This company, which is to construct the line from Marquette, Mich., to Mackinac, and receive the State swamp land grant, has filed the required bonds with the State authorities and has put three surveying parties in the field.

Golden & South Platte.

The line is located to within two miles of the junction with the Denver & Rio Grande. About 10 miles of grading is completed.

New Orleans, Baton Rouge & Vicksburg.

This company's property was to have been sold in New Orleans, August 20, but the sale was postponed. The affairs of the company have been further complicated by a claim for back taxes which has been put in by the State of Louisiana.

Chippewa Falls & Western.

The people of Chippewa County, Wis., have voted against granting aid to this company to build the road from Eau Claire to Chippewa Falls. The amount asked was \$75,000.

Cincinnati, Wabash & Michigan.

Work on the extension of this road from Wabash, Ind., south by east to Marion is being pushed forward. The grading is completed from Wabash south 12 miles, and the bridge over the Wabash River is nearly completed. A large force is at work grading the line from Marion northward. The iron has begun to arrive and tracklaying will shortly begin. The distance from Wabash to Marion is 19 miles.

Denver & Rio Grande.

About 20 miles of the extension from Pueblo, Col., southward, is graded and ready for the ties, and the work is going on rapidly.

South Mountain & Boston.

This road is now under contract from Columbia, N. J., to Stillwater, 16 miles, and the contractors have several gangs at work. The engineers are locating the road from Branchville to the New York line, and it will be put under contract as soon as the location is completed. An installment of 10 per cent. on the stock has been called in, payable October 1.

New Jersey Midland.

The Belvidere Branch is located from Belvidere, N. J., nearly to Newton, and the engineers are advancing their work rapidly. The right of way has been partly secured. Several of the towns along the line have subscribed the amount asked for, and it is probable that the amount expected from stock subscriptions will be raised.

Pequest & Wallkill.

This company recently filed the map of its line as located with the Secretary of State at Trenton, N. J. Several new directors came into the board at the recent election who represent a considerable amount of capital, and it is said that there is a prospect that the road will be built. The company was organized several years ago, but no work has been done. The road is to be an extension of the Warwick Branch of the Erie southwest to Belvidere, N. J.

Springfield & Northwestern.

Track is laid from Petersburg, Ill., southeast about 11 miles. About eight miles remains to be laid to bring the road to Springfield.

Atchison, Topeka & Santa Fe.

This company has built a large warehouse and extensive stock yards at the terminus of the road at Granada, in Colorado, and is making strong efforts to secure the New Mexican trade. A wagon road has been surveyed and laid out from Granada southwest to an intersection with the Dodge road, 87 miles from Granada. Two of the principal firms of New Mexican forwarders have moved their headquarters from Kit Carson, on the Kansas Pacific, to Granada.

Pennsylvania.

This company has brought suit in the United States Circuit Court at Chicago against John B. Sherman, A. M. Allerton and S. W. Allerton, for breach of covenant. The complaint alleges that the defendants, with Joseph McPherson, now deceased, made an agreement by which they leased from the company the stock yards and hotel at East Liberty, Pa., for ten years from April, 1864, and agreed to receive and take care of all

stock brought to that point and to clean the stock cars coming into the yards. They also agreed, as part of the consideration, to use their influence to secure the shipment of stock over the Pennsylvania road and its western connections. This agreement the defendants, it is claimed, failed to keep, and the company sustained large damages directly by the failure, besides indirect damages owing to loss of business and decrease in rates owing to competition from other lines, and the company therefore sues for damages. It is also alleged that the plaintiffs transferred their interest to McPherson (now deceased) without consent of the company.

Manchester & Camden.

The articles of consolidation of the Medford & Camden Company with the Manchester & Camden have been filed with the Secretary of State at Trenton, N. J. The road is to run from Manchester, N. J., a little south of west to Camden, a distance of 45 miles. The capital stock is to be \$300,000.

St. Joseph & Denver City.

The Protection Committee appointed by the bondholders has received a letter from the Mayor of St. Joseph, Mo., urging them to complete their investigation. He also says that the city of St. Joseph holds \$500,000 of the stock of the company, for which an equal amount of city bonds was issued. This amount would be given in order to have the difficulty with the company settled.

New Orleans, Mobile & Texas.

Of the State bonds voted by Louisiana to the Texas line of this company, \$1,500,000 have been issued legally. It is now, however, stated that coupons for more than this amount have been presented for payment, and it is thought that a further and illegal issue has been made.

Erie.

Work is going on on the rebuilding of the shops recently destroyed by fire at Newburg, N. Y.

The Jersey City Fire Commissioners have refused to allow the erection of wooden shop buildings in that place, and have put a stop to work on the buildings that had been commenced. It is said that the company will probably remove its shops altogether from Jersey City to some point up the road. An additional motive for the removal is the fact that the space available for shop purposes in Jersey City is too small, and more ground cannot be obtained without taking much needed space from the yards.

Surveys are being made for a more direct line than the present between Paterson, N. J., and Rutherford Park. The proposed new line will leave the present one near Clifton and pass through Dundee, crossing the Passaic some distance above the present bridge. This line would be somewhat shorter than the present one, and would avoid the numerous curves therein. In case it is built, the present line would probably be retained for local trains. The Paterson Press says: "Singularly enough, this appears to have been almost precisely the line surveyed by J. R. Sullivan, Engineer of the Society for the Promotion of Useful Manufactures (which owns the water power at Paterson), for a railroad between Paterson and New York, in 1828-9, as shown by a map appended to a report on the subject made by him in 1829. His route was the shortest practicable between those two points. The subsequent deviations were probably made to save the expense of heavy cuts and fills, although it is said that the engineers who built the road had fanciful ideas about illustrating the 'poetry of motion' by having trains describe graceful curves about hill-sides, and hence introduced a few curves unnecessarily!"

The road is really crooked enough to make the last statement seem probable.

Louisiana Bridge.

The Chief Engineer, Mr. E. L. Corthell, informs us that, although nothing was done in the river till July 1, on account of the delays in the approval of the plans by the Secretary of War, on the 1st of September 57 per cent. of the substructure was completed. The two long spans of the iron work were completed and mostly shipped, and the draw was nearly ready to be shipped. The seven spans to be furnished by the Keystone Bridge Company were half done. The company feels assured now more than ever that with good luck it will have a train across the bridge on the 1st of December, which would certainly be extraordinarily rapid work.

New York & Oswego Midland.

There are rumors that Mr. George Opyde will shortly resign the presidency of this company and that he will be succeeded by Mr. George M. Pullman, of Chicago, as the representative of a new syndicate which will furnish the money necessary to complete the company's line to Buffalo. How much foundation there is for these rumors it is hard to say.

Sixteen anthracite-burning locomotives, six passenger and ten freight, have lately been placed on the upper end of the road, and seven more are nearly completed. Should the use of anthracite coal prove economical, the company's engines will all be altered to anthracite burners.

This rumor of Mr. Opyde's resignation has since been denied by officers of the company.

It is stated that the contract for the extension of the western line from its present terminus at Scipio Center, N. Y., to Buffalo has been let to Thomas P. Simpson. The distance is given as about 125 miles.

Mansfield, Coldwater & Lake Michigan.

A committee of investigation appointed by the stockholders last January has just submitted a report. The length of the main line in Ohio is 122.4 miles, the estimated cost of grading which was \$475,880, or \$3,890 per mile. The total subscriptions to the stock in Ohio were \$600,000, when the company was consolidated with the Ohio & Michigan in May, 1871. The city of Mansfield subscribed \$140,150, on condition that the shops should be located there, and paid up \$113,184. Swan, Rose & Co. agreed to grade the line for \$6,250 per mile, \$4,250 in cash and \$2,000 in stock, and their bid was formerly on file in the company's office. The report states that these figures were subsequently changed to \$6,500 per mile, \$4,500 in cash.

The road is completed for 66 miles, and 56 miles more is graded and tied.

The Boston & Maine and Maine Central Controversy.

The Boston & Maine Company has brought suit against the Maine Central for \$75,000 damages, resulting from the refusal of the latter company to allow connection to be made with its road in Portland, and the cutting off of the Boston & Maine's through business. An attachment has been put upon all the Maine Central property in Cumberland County, Me.

Suits by Stock Shippers.

John T. Alexander, George D. Alexander and W. Fitch have commenced suit against William H. Vanderbilt, the Lake Shore & Michigan Southern, the Toledo, Wabash & Western and the New York Central & Hudson River companies to recover a large amount in damages. The plaintiffs are large shippers of stock, and had been in the habit of shipping east over the Pennsylvania road, but in June, 1870, made a contract with the companies named through Mr. Vanderbilt, by which they agreed to carry Mr. Alexander's cattle at a fixed rate of \$105 per car, or, should the transfer of his business result in a break of rates, at as low a rate as cattle were carried by any competing line. The transfer at once resulted in a break. In order to maintain its business, the Pennsylvania reduced its rates to \$50 per car, and the Erie carried cattle during the entire year suc-

ceeding Alexander's contract for its largest shipper for nothing. The New York Central itself carried for some of its shippers at from \$40 to \$50 per car, but during that period compelled Alexander to pay \$105 per car. The facts as to the rate for which cattle were carried by the New York Central and upon other roads during that period of time were developed in the taking of depositions in another case now pending in the United States circuit court in Chicago. The plaintiffs now claim the difference between the price of \$105 per car paid by them and the rates at which stock was carried for others.

Seal Locks for Cars in Bond.

The committee appointed by the Secretary of the Treasury to examine and report on such car-locks as might be presented for the use of the Treasury for customs purposes, has selected the lock presented by D. K. Miller. This lock is pronounced superior to any other presented, although the size of the seal does not give satisfaction. The committee, therefore, recommends the adoption of Mr. Miller's lock with certain modifications, which he is willing to make. The locks will cost \$4 each, but can be furnished for \$3.75, provided 20,000 are ordered at once. The committee reports that it is for the best interests of the Department to use paper seals, and manufacture them under its own supervision.

Baltimore & Ohio.

An order from the Master of Transportation announces that hereafter the line from Strasburg Junction, Va., to Harrisonburg will be operated by that company as a portion of its Winchester, Potomac & Harrisonburg Division, under charge of Mr. S. Spencer, Supervisor of Trains.

This is the section of the Manassas Division of the Washington City, Virginia Midland & Great Southern lately leased. It is 49 miles long, and makes the whole length of the Winchester, Potomac & Harrisonburg Division 100 miles from Harper's Ferry to Harrisonburg.

Syracuse, Phoenix & Oswego.

It is stated that the grading on this road is well advanced, and that the road will be ready for the iron by November 1. The road is about 16 miles long from Liverpool, N. Y., on the Syracuse Northern, five miles from Syracuse, north by west to the New York & Oswego Midland near Phoenix.

Lake Ontario Shore.

The grading from the present terminus at Ontario, N. Y., west to Charlotte is nearly all done, and the ties are distributed along the line, but no iron has been laid west of Ontario.

New Freight Depots in New York.

The Pennsylvania Railroad Company has added piers 2 and 3, North River, to its present depot at piers 1 and 2, and is putting up a new building to be used by the fast-freight lines.

The Delaware, Lackawanna & Western Company has made considerable improvements on Pier 19, North River, which it uses as a freight depot.

The New York & Oswego Midland Company has leased Pier 23, North River, as a freight depot, and has put up extensive sheds on the pier, which it is now using.

Shenandoah Valley.

The grading between Front Royal, Va., and Luray is progressing rapidly, being nearly two-thirds done.

Carthage, Watertown & Sackett's Harbor.

Work has been commenced on the extension of this road through the city of Watertown, N. Y. The road is now completed from Carthage, N. Y., on the Utica & Black River road, west 18 miles to Watertown, and is to extend 12 miles further west to Sackett's Harbor. It is leased by the Utica & Black River Company.

Des Moines Valley.

The decree of the United States Circuit Court ordering the sale of this road has been modified so as to require the road from Des Moines to Fort Dodge (88 miles) to be sold for the benefit of the second-mortgage bondholders, and the road from Keokuk to Des Moines (161 miles) for the benefit of the first-mortgage bondholders. The second-mortgage bonds were a first lien on the line from Des Moines to Fort Dodge.

Des Moines & Minnesota.

A Des Moines (Ia.) dispatch says that a portion of the bonds have been placed, and the directors have resolved to complete the section of 17 miles, from Des Moines north to Polk City, this year.

Atlanta & Richmond Air Line.

This road is to be opened for regular business over the whole line from Charlotte, N. C., to Atlanta, Ga., about September 15, when through passenger and freight trains will be put on.

The opening of this new line reduces the distance from Richmond to Atlanta to 545 miles, against 649 miles by the present somewhat roundabout line by way of Charlotte, Columbia and Augusta. From New York to Atlanta the distance is 890 miles against 949 miles by the inland route through Lynchburg, Bristol and Dalton, and 1,039 miles by the coast line through Weldon, Wilmington and Augusta.

Plymouth, Kankakee & Pacific.

A petition in bankruptcy has been filed against this company by a holder of its bonds, whose claim is founded on a number of unpaid coupons. The petition alleges that the company is notoriously bankrupt, and can neither build its road nor pay its creditors, and that its property is being taken and sold to pay small claims. The road is nearly all graded, but no iron has been laid.

Cairo & Fulton.

It is reported that this company has bought a part of the charter of the Kansas City & Memphis road, and will build a branch from its line to Memphis under that charter.

Milwaukee & Northern.

The pile-driving for the bridge over Fox River at Green Bay, Wis., is completed, and the superstructure is advancing rapidly. Work has been commenced on the new depot.

Helena & Iron Mountain.

At the annual meeting held in Jonesboro, Ark., September 1, the contract for the construction of the road made with the Southwestern Construction Company of St. Louis was approved. The road is to extend from Helena, Ark., a little west of north to a junction with the Cairo & Fulton, or its projected Memphis Branch.

Laurens & Asheville.

Laurens County, S. C., has voted to subscribe \$400,000 to the capital stock of this company.

Railroad Taxation in Missouri.

The St. Louis & Iron Mountain road has reported to the State Auditor of Missouri the valuation of its property for purposes of taxation. The main line is valued at \$1,048,712.50, the Arkansas Branch, \$493,750, the rolling stock at \$864,965.96 and the other property at \$428,950.89, making a total of \$2,836,369.

The Missouri Pacific reports its valuation at \$3,961,462.55, of which the main line makes \$2,270,000, the Carondelet Branch, \$56,250, and the rolling stock, \$1,335,915, the rest being real estate and other property.

Both companies made returns under protest, claiming to be exempt from taxation under the law, and announcing their purpose of contesting the validity of the present law.